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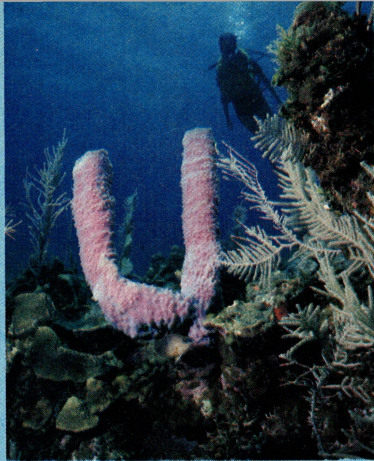
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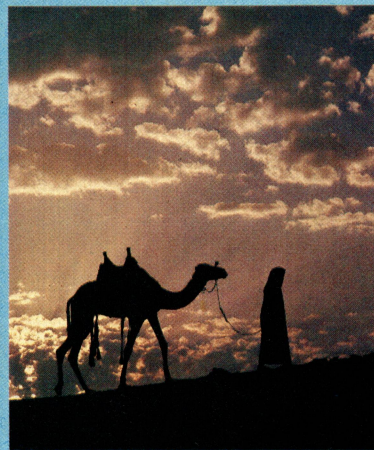
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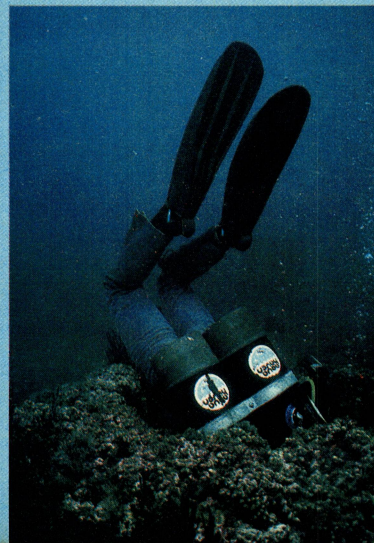
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COVER

Among veteran underwater explorers, the Red Sea is considered the most beautiful dive spot on earth. SDM Adventure Editor Jack McKenney photographed model Sari Gains in this diver's paradise. Story on page 8.

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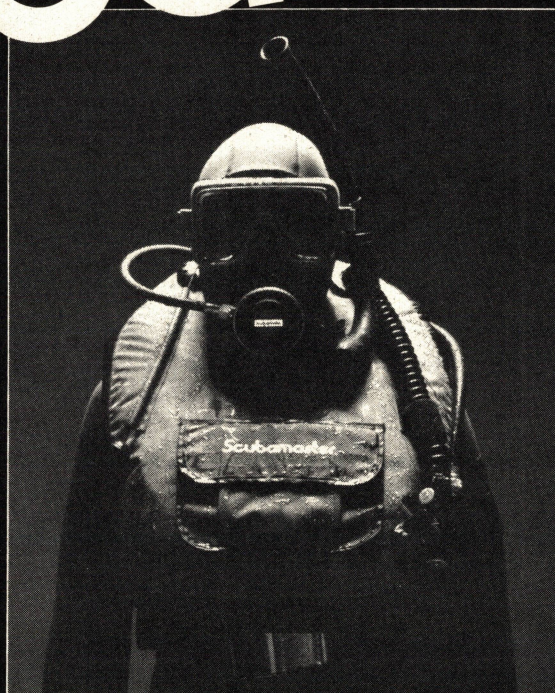
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SDM Editorial

BY THE PUBLISHER



PROGRAMMING FOR SCUBA SAFETY

One of the most difficult problems facing the certified diver is staying fit. Once the scuba class is finished and the novelty of those first few open water dives has worn off, the new diver may find himself slacking off. Perhaps it's the arrival of winter or maybe intensive school studies which cause the diver to stray. Within a month to six weeks of inactivity the diver has literally lost the muscle strength and stamina he worked so hard to build up during scuba class. In other words, he's back where he started.

How can one stay completely fit for diving, so that he or she may go off on a dive trip whenever he chooses? The obvious answer is to keep diving on a regular basis if it is humanly possible. Two dive trips per month is the minimum activity to maintain an acceptable degree of fitness. If you are having difficulty finding dive buddies or space on a dive boat, you might consider enrolling in some type of organized educational activity. Specialty dive courses on underwater photography, shell collecting, and aquarium keeping offer similar opportunities for organized dive outings.

If regularly scheduled weekend dives are an impossibility, then regular weekly workouts in a swimming pool could be a good alternative — provided those pool visits are really an organized workout and not just a quick dip. An average diver in good condition should be able to swim a minimum of one-quarter mile with fins and mask (no snorkel) with a rest stop. This type of exercise maintains leg muscle tone, as well as keeping the respiratory and circulatory systems up to par. A workout two or three times a week is adequate for maintaining good dive fitness. Incidentally, a scuba instructor

should be able to do a one-half mile minimum swim.

For those divers who are out of shape, and know it, the job is more difficult. It means starting from the beginning and rebuilding muscles, stamina, strength, skills, and self-confidence. But how do you get started when you've been away from diving six months?

One of the best ways to get started is to design for yourself a simple, but rigid, get-back-into-shape program. The first step is to establish a goal: a specific date a couple of months ahead of when you want to start diving again. The target date might be a dive vacation, a long weekend dive trip, the start of lobster season, or whatever.

The next step is a self-appraisal of your present physical condition. Just how bad is it? How many laps of a swimming pool can you do without being completely exhausted? How much overweight are you? How far can you swim underwater on one breath? Write all of this information down, for it will serve as your personal standard of comparison throughout the next few weeks of training.

Next is to set up a program of exercise which will occur during the six to eight weeks prior to your dive date. The exercise can be arranged to conveniently fit your life style, but should include at least three to four visits to the pool each week. Business executives may find it more convenient to swim at lunch time, while others might find evenings and Saturday afternoons better.

The important thing here is your self-commitment. Once you start, let nothing stand in the way of accomplishing your regular exercise schedule. Don't let un-

expected business appointments, a special TV program, visiting relatives, or a basketball game stand in the way of your exercise program. Make this program the most important thing in your life — it may very well save your life.

What kind of exercise is best? Swimming naturally. Situps and jogging may be fine for improving circulation and wind, but only swimming will exercise those specific muscles you use in diving. Start out slowly with a minimum number of pool laps, increasing during each successive session. In a month of exercising four times per week, a person can easily work up from four laps to a possible one-quarter mile swim.

A few words of caution should be kept in mind while going through this program — improvement often comes slowly in the beginning. Just stick with it on a steady basis. Don't attempt severe dieting while going through such an exercise program. You're going to need the energy to build up your strength.

Six to eight weeks of regular swimming and diving exercise will work wonders for you. Physically, you'll look better and feel better, and most probably sleep a lot better. Mentally, you will have restored your confidence in your diving ability — and thus build up your immunity to possible underwater panic. Another benefit from such a program is restored dive skills. You again feel familiar with such basics as clearing your mask, emptying a snorkel tube, and making a surface dive. You can now return to open water diving as a much healthier and happier diving enthusiast. But most important — you're a lot safer than that other guy who is wheezing and puffing his way around the ocean. ➤

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Underwater Forum

Scuba Scouts Sprout

In the November 1977 issue of SKIN DIVER Magazine a story appeared: Meet Pop Taylor, Florida's Pied Piper of Diving, by Bill Barada. It was the story of how I taught the small fry to swim and snorkel. The program, which I called Scuba Scouts, is an education in water safety, artifact and fossil hunting. It helps to keep young minds occupied and young bodies in top physical condition.

I waited for a year to see the outcome among scuba instructors as well as dive shop owners. Believe me I was surprised at the number of scuba instructors who approved of what I was doing and offered their help. Only one instructor disapproved. He said I needed a one way ticket to the institution for the incurable and feeble minded. However, this was only one out of all who read the story and took the time to write and is an indication to me that I am on the right track.

The best compliment I received was from a dive shop instructor who said that after reading about Scuba Scouts he decided he would give it a try. His first offering was a three hour program which was free. The program soon became very popular. Soon the parents watching their children became interested and then both parents showed up and tried diving along with their children. As a result, the parents received their C-cards and the whole family began diving together. The instructor personally thanked me and said the Scuba Scouts were a Godsend to his business.

Other instructors and dive shop owners may have different views and I'd like to hear more opinions about the Scuba Scouts youth program.

POP TAYLOR
3905 Ridge Ave.
Tampa, FL 33603

Nuclear Pollution?

The editorial, Who Is Killing Our Oceans? in the October issue covered many good points, but to brand "coastal construction of nuclear power plants" as an "outstanding example of disregard for marine ecology and deliberate pollution perversion," is not being factual.

Coastal nuclear power plants as well as coastal oil and gas fired power plants do use sea water for cooling. In nuclear plants the sea water does not enter the reactor. The sea water is used to condense the exhaust steam from the turbine in the main condenser and cool an intermediate cooling water circuit for removing heat from rotating equipment.

Pure water cannot become radioactive and the sea water is isolated from the nuclear reactor by at least one intermediate system of very pure water. The sea water discharged from the power plant is for all practical purposes, not radioactive. You could swim in the discharge all day long and receive less radiation than you would by sunbathing for 15 minutes on an isolated beach.

Although the word pollute means, "to make foul or unclean," some people have invented the term "thermal pollution." What they mean by this is that something is hotter than it was before. By this definition, when you boil a lobster, you are thermally polluting it. The same people say the sea water discharged from a power plant (nuclear or fossil fueled, it makes no difference) is thermally polluted because it may heat the water surrounding the discharge by 6 to 8°F. Fortunately no one has told the sea life of this pollution and they thrive.

With the waters off California cold both summer and winter, I, for one, welcome all the "thermal pollution" we can get.
JOSEPH W. HAGEN LA CANADA, CA

A Responsible Attitude

Thank you for publishing Captain Cousteau's article, Conservation Crisis, in the October issue of your fine magazine. I am pleased to see a "sporting" magazine showing a responsible attitude toward the living things in the sea.

As we here in the Navy are also concerned, vitally so, with our aquatic environment, I share your hope that those people in responsible positions in government will exercise their authority and begin correcting the many problems in our environment.

STEPHEN J. SCHMEHL (SN/SU)
SAN DIEGO, CA

Good Divers

Thanks for the November editorial, The Measure of a Good Diver. I hope all divers diving with me this season read your monthly editorials, and this one for sure. If they do, maybe my job will be a little easier aboard *Good Time Charlie*.

CAPTAIN BILL CRAWFORD
Tropic Isle Dive Shop
Key Largo, FL

Dive Buddies International

A new dive club called Dive Buddies International has been established. Its purpose is to get divers from various parts of the world acquainted. It is anti-

(Continued on Page 16)

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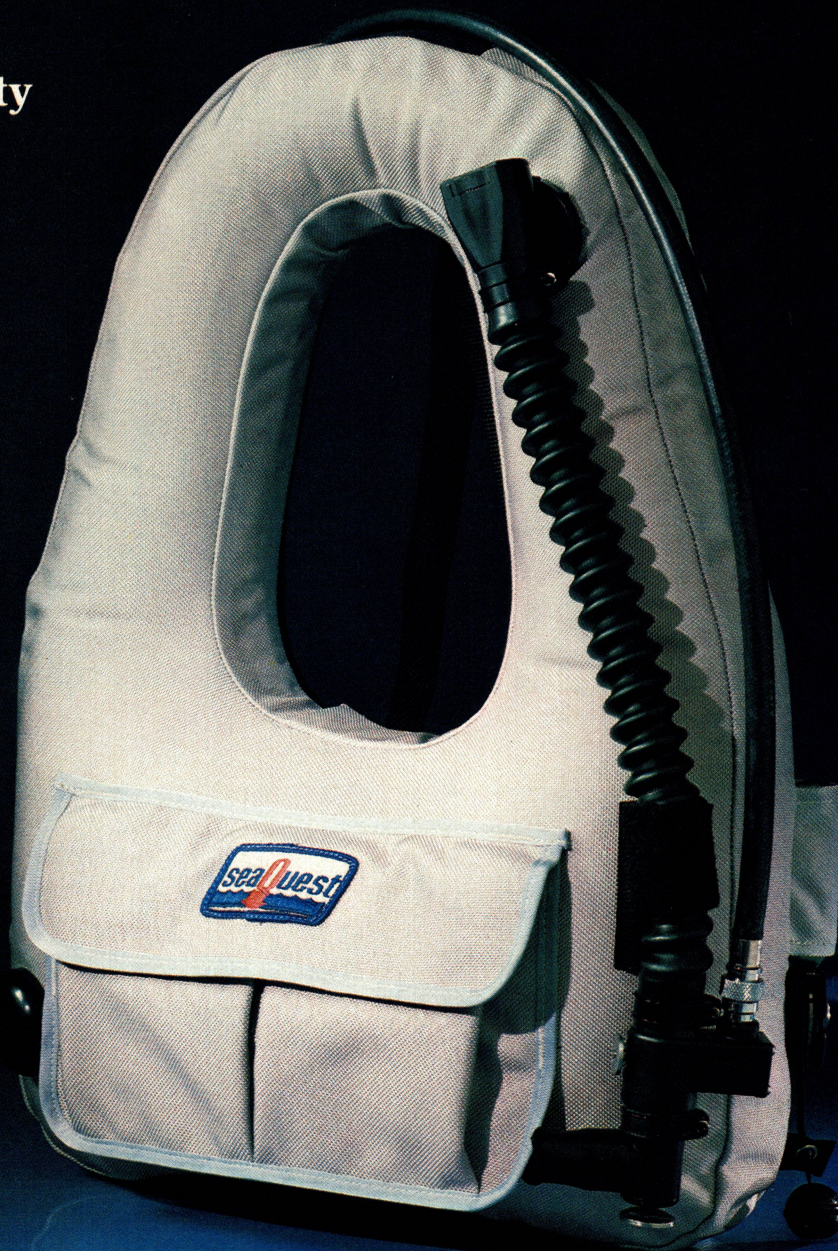
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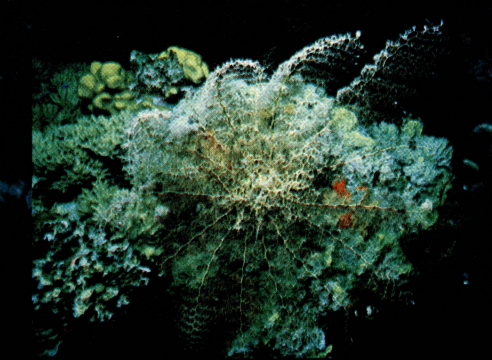
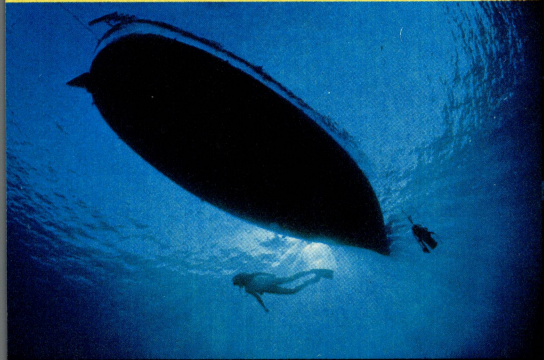
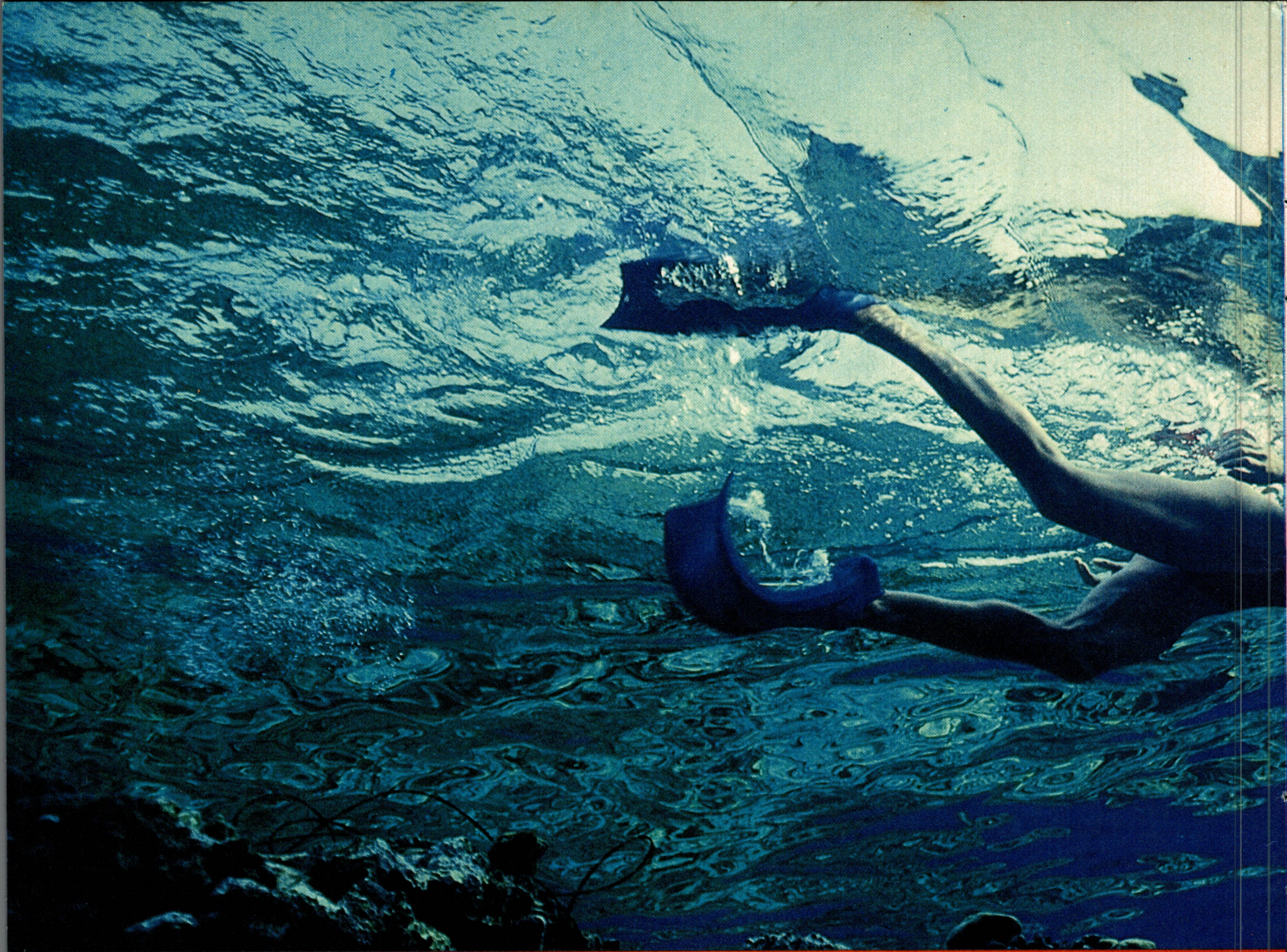
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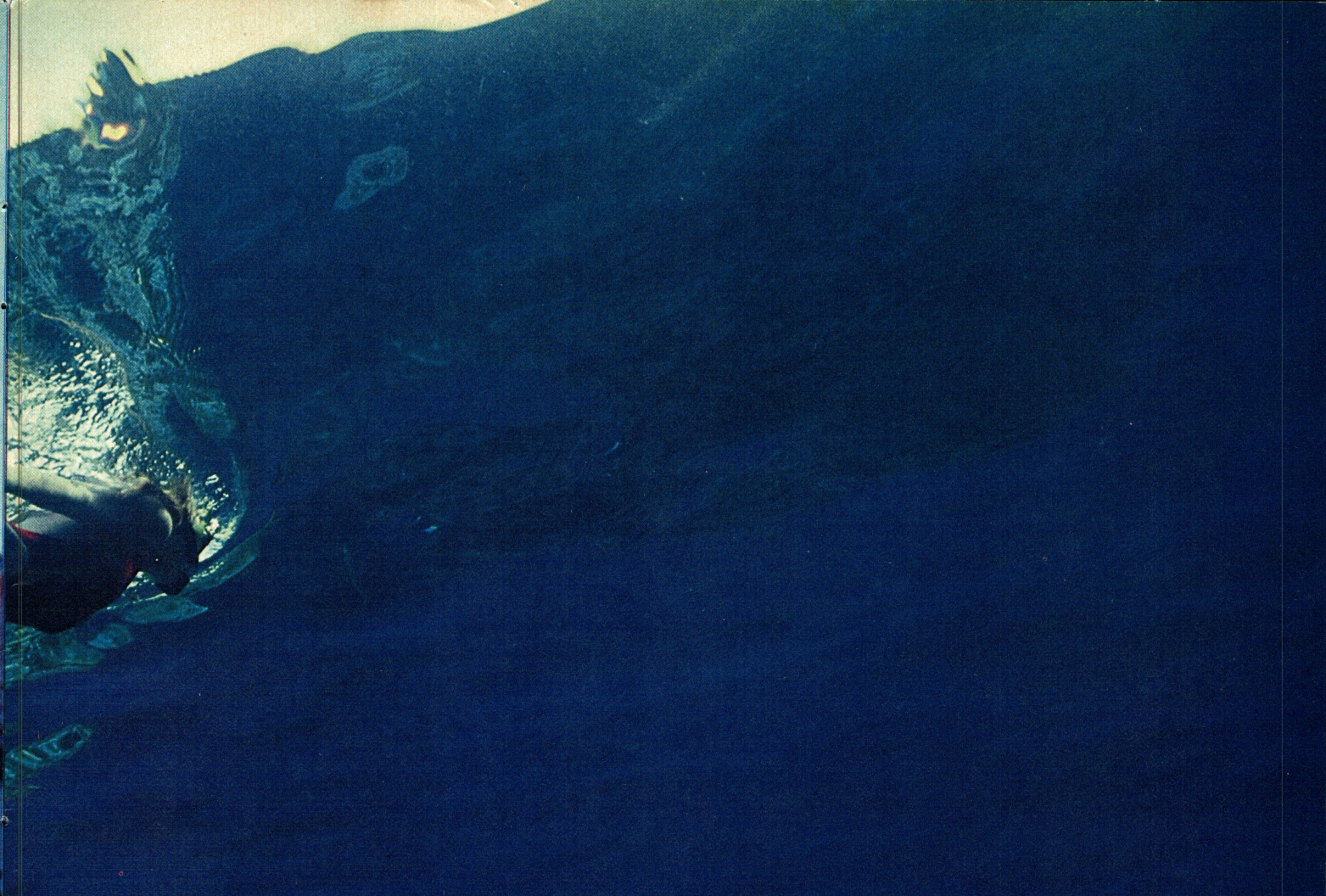
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God's Other World

Text by Jack McKenney

Photography: Bob Abrams, Jack McKenney

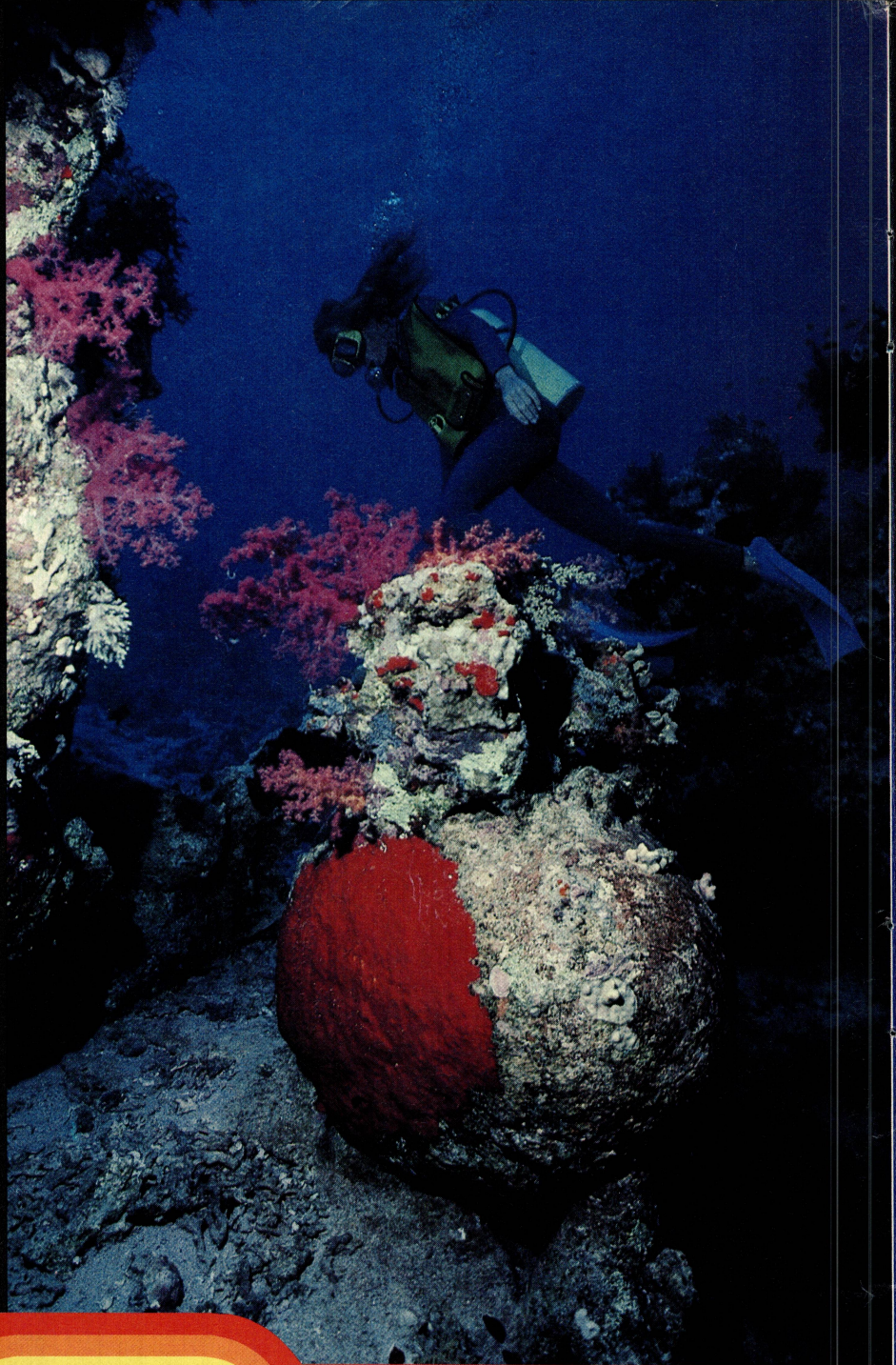
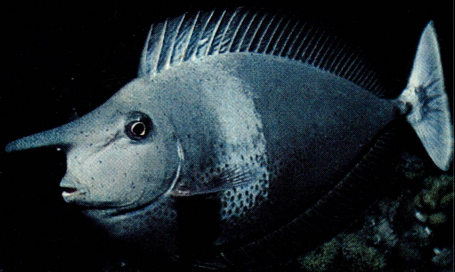
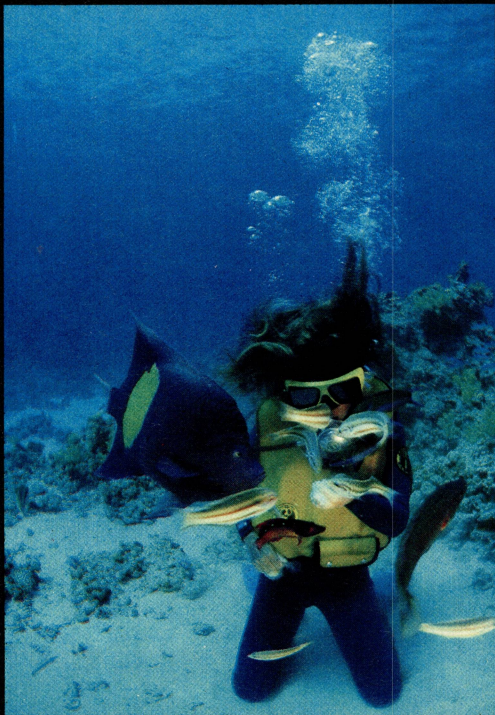
If I had to choose one place to spend the rest of my diving days it would be at the tip of the Sinai Peninsula in the Red Sea. This relatively new sea (by geological standards) stretches from the tip of the Gulf of Eilat to the horn of Saudi Arabia. It is only 175 miles long, 12 miles wide and averages 3300 feet deep. In comparison to other seas, this storehouse of wonderful living things is just a youngster.

After reading Hans Hass' book *Under the Red Sea*, 15 years ago, I knew that one of the highlights of my career would be to explore and film this exotic body of water. However, I put off visiting the Red Sea until I had the means to film it properly.

A few months ago Bob Abrams, underwater photographer/naturalist, and co-producer of my new film, traveled with me and experienced underwater model, Sari Gains, to

Sharm el Shiekh where we were to spend a month diving out of the Red Sea Divers Center. We were to explore the area and write about it for SKIN DIVER Magazine and to produce a 30 minute film for my 1979 professional dive store lecture tour. U.S. Divers Company, the world's largest manufacturer of dive equipment, was supporting our expedition as one of the producers. Sari Gains had dived the Red Sea on two previous occasions and Bob Abrams had already spent 17 days exploring around Eilat and Sharm. On the flight over, both had been filling my head with visions of some of the loveliest diving to be experienced anywhere. I wasn't disappointed.

Although we had scheduled a month for producing our new film, our pace was a frenetic experience in human endurance. We were up at the crack of dawn every day and busy maintain-



RED SEA

ing camera gear into the late night hours. In between we spent our time searching out and filming those areas that we felt represented the very best diving at the tip of the Sinai.

There are three things that are a must for a successful dive vacation. Number one is accessibility. It is a sad dive visitor who gets blown out by bad weather or boats not operating. At the tip of the Sinai there is always a lee to dive. However, it's seldom necessary to search out a protective cove because the weather is generally good. On the last day that we were there, there was a storm which consisted of a clouded sky, a little wind and a little rough water; nothing serious enough to prevent people from diving. Every other day there was a bright sun in a blue cloudless sky.

Clear water is also a must. The Red Sea averages at least 125 foot visibility. Some days it was 175 feet and on others, perhaps 100 feet.

The third necessity is interesting things to see. In this respect especially, the Red Sea has little competition. Its coral growth and fish life are among the most exquisite I have seen anywhere, and the fascinating thing about the tip of the Sinai is that there are virgin sections that still have not been dived.

Our dive guide was Howard Rosenstein, a 31 year old adventurer with a degree in anthropology from U.C. Berkeley. He, along with Yossi Kvashni, an experienced marine explorer and navigator, and Michael Daniel, a Tel Aviv entrepreneur and publisher of the *Red Sea Diver's Guide* has built up the impressive Red Sea Divers Center in the middle of a barren, scorching, but very beautiful desert. Seven years ago, Howard and his lovely wife Sharon immigrated to Israel from Hollywood, Calif. For professional and economic reasons he wanted to build his own dive business. They started their business, as well as their home, out of the back of a camper.

Today, the Red Sea Divers Center in Sharm el Shiekh consists of 1200 square feet and sits on a broad sandy shoreline. The center has 150, 3000 psi, U.S. Divers aluminum tanks and an appropriate number of regulators, vests and basic swim gear to complement the operation. It also has the largest Bauer compressor in the Middle East. Physically it's an impressive machine, capable of pumping 50 cfm.

Rosenstein has two main dive boats. One is a 45 foot, converted police craft that will comfortably hold ten divers and, in a pinch, up to 20. The other is a 45 foot long converted fishing boat with ample room down below for spreading out camera gear. It, too, can accommodate 10 to 20 people. In addition,

Howard has a large glass bottom boat that he can pull into service for diving.

The three business partners also operate a dive center in Eilat, a brand new facility for European divers. The Eilat center adds a unique advantage to Red Sea Divers' services: Those divers that would rather go on a safari trip along the gulf are serviced by the Red Sea Divers Centers located at both ends. You can get equipment in Eilat and return it in Sharm. Red Sea Divers also operates a dive school based in Tel Aviv.

After seven years Howard Rosenstein probably knows the tip of the Sinai better than anyone. However, it has only been within the last year that he has begun to explore the Straits of Tiran, strategically important to Israel and biologically an area with great schools of pelagic fish, reef fish of all shapes, sizes and colors, and coral structures that appear to be the sculptured work of some mad artistic genius.

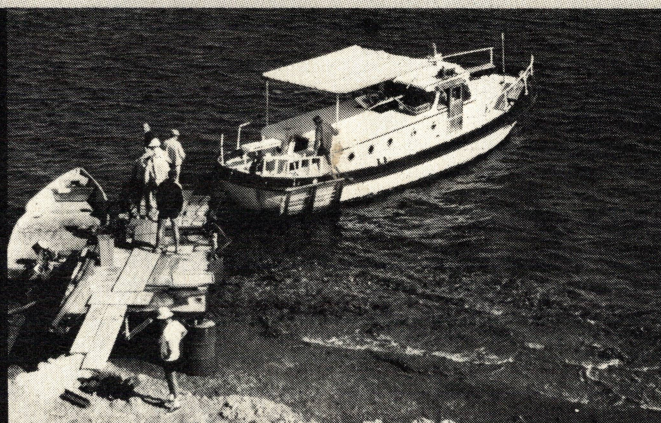
The Straits of Tiran are bordered on the Saudi side by Tiran Island and on the Israeli side by three reefs that shoot straight up from 600 feet to form tabletops at the surface.

Each area of the Straits plus all of the other 10 or 11 sites we visited are so different it would take an entire magazine to describe them all, so I will generalize in some of my dive site descriptions and specifically talk about some of those dives we found especially exciting.

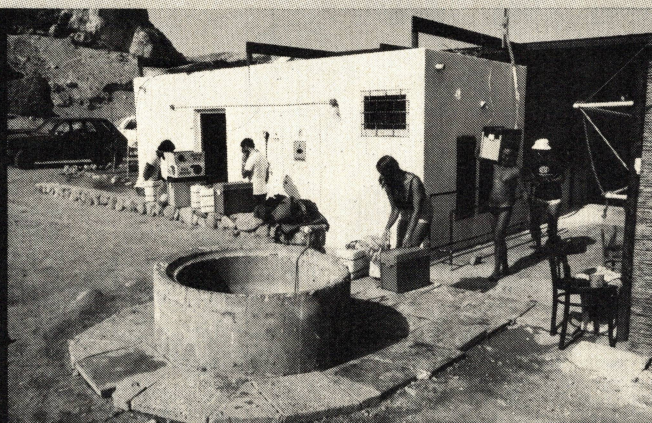
Thomas Reef is strictly a drift dive because the wall is so sheer it's impossible to anchor there. A diver can sit on top of this reef, bend over with his face in the water and watch an underwater zoo go by. Various types of angelfish, including the queen angel, a vibrant blue fish with a yellow map of Africa on its side, and the emperor angelfish, perhaps the loveliest angelfish in the world, might swim up to you and nibble at some coral just inches from your flippers. Down below, a hawksbill turtle may slowly swim by. The striking corals clustered about your feet are truly a variety of pastel colors including mauves, greens, blues, reds, yellows, and pinks.

Pushing off the tabletop and gliding down barely 15 feet, we enter a series of caves where small white tip sharks can be found sleeping. The beauty of this wall would enthrall any underwater photographer.

Just around the corner is Gordon's Reef, different because of the vast amount of schooling fish and plateau type corals that slope gently from 45 feet down to about 100 feet. Plates of *Acropora* coral, supported on single slender bases, hold fascinating surprises underneath their tabletops. Many of them



Preparing one of the Red Sea Divers Center's fully equipped dive boats.



The Red Sea Divers Center — an oasis in the midst of a scorching desert.



Turkish amphora and other artifacts are nearly hidden by encrusting coral.



El Al, Israeli Airlines, operates direct flights daily from New York to Israel on comfortable 747 jumbo jets. Arkia, Israel's inter-country airline, flies from Tel Aviv to Sharm el Shiekh by way of Eilat.

are dripping with soft alcyonarian corals of deep purple, brilliant pinks, misty yellows and mellow whites. On a shallower section of Gordon's Reef there are sculpture-like steel rods, the jettisoned cargo of a beached ship. The rods jut 15 feet up from the bottom and are festooned with tiny clumps of coral. At their tips are a school of some of the loveliest gold fish (*Anthias* sp.) ever to be found anywhere.

However, when it comes to the sheer beauty of soft and hard corals and reef fish it's hard to beat Howard's Temple. This picturesque coral head is about 100 feet in diameter at the base and 30 to 40 feet across at the top. There are smaller heads pressing up at one side, forming narrow crevices and undercut caves richly embroidered with soft alcyonarians. At night, with a couple thousand watts of cable power lighting, the colors are dazzling. Every imaginable hue found in these soft corals is present here at the temple. Other soft corals shaped like rare African flowers or cauliflower, and sea urchins that look like powder puffs, are common residents. Huge lacy sea-fans are common at one of the narrow passageways. And at the top of the Temple, moving in unison to the approach of a diver or a bigger fish looking for dinner, is a large school of gold fish which crowns the circumference.

We set up a fish-feeding sequence here, because there was a giant queen angel that was curious and friendly. After a while she became a nuisance, butting her beautiful face into almost every scene we attempted to film. We made more dives at Howard's Temple than any other site, and an entire one hour film could easily be made at this very unique and lovely spot.

On the last dive, Ole Hansen, one of Howard's boat captains, discovered an old earthen pot embedded in the coral. Ole has made some 20 dives on this coral head and the pot was so well concealed that it was only a matter of luck that he spotted it. There is a strong possibility the pot could legitimately be an amphora, because barely a mile away there is a dive site called the Amphora Wreck. This wreck is in 60 to 85 feet of water due east from a magnificent coral head. There are half a dozen large Turkish amphora, a couple of old anchors and pockets of liquid mercury.

The wreck was worked professionally at one time by archaeologists. Various navigational aides, pieces of wood, anchors and amphora were raised and are now on display in a museum in Haifa. The wreck dates back 450 years and the large pots make exciting photographs to add to your collection of underwater pictures.

Another wreck that's an exciting part of our film was discovered just days before our arrival by Howard. It is around the tip of the Sinai in the far reefs extending out from Ras Muhammed that reach into the Gulf of Suez. An old Bedouin had told Howard about this wreck and it may be one of Lawrence of Arabia's ships. In his book *The Seven Pillars of Wisdom*, Lawrence describes ships loaded with gold sovereigns from Britain which

RED SEA



were used to pay Arabs to unite them against the Turks. He wrote that some of these ships foundered on the Red Sea reefs and he explicitly mentions the reefs of Tiran. The wrecks lie upside down against the base of a reef in 85 feet of water. Approximately 200 feet long, it is completely covered with hard corals and its huge, three-bladed prop is bejewelled with soft corals and a large tree of black coral. The ship is broken in half near the bow and at the entrance into the aft section is a tremendous school of glassy sweepers. We swam along passageways shining our bright movie lights into places no other artificial light had shown for 65 years, revealing the stark and corroding interior.

Are there gold sovereigns buried inside the rusting hulk? Perhaps one day someone will find out. We did find the helm with the ship's wheel perfectly intact. Because of the long distance we had to travel by boat and the depth we were diving, our dives were two short ones each of the two days that we were there. We were busy filming and had very little time to actually search through the ship. Chances of diving this wreck are 50-50, because of its distance and the rough water that can be encountered around this far tip of the Sinai.

Another area high on the list of everyone who dives out of Sharm, are the reefs and drop-offs surrounding Ras Muhammed. The drop-offs close to shore can be reached by wading out across the coral. You can stand on the upper lip of the reef in a foot and one-half of water and step off into depths of a couple of hundred feet.

At some points, the walls are even undercut. One-quarter mile out from shore are North and South Islands, two reefs that come up to the surface and drop precipitously on the ocean side. Along these reefs great schools of jacks, surgeonfish and other pelagic fish are usually found. Sharks lazily frequent the area and great bumphead wrasse patrol the North Island. In a past issue of National Geographic Dr. Eugenie Clark stated that she would rather dive at Ras Muhammed than anywhere else, but of course that was before Howard took her to the Straits of Tiran.

Around the corner from Ras is a cave called Marsa Bareka. Looking up and out through the crevices and opening, one can see a ballet of glassy sweepers keep time to the ocean rhythm. This cave has been photographed on numerous occasions for various publications throughout the world.

There are other sites at the tip of the Sinai that are more popular with some divers, but in a month under the expert guidance of Howard, I think we saw some of the best. The adventures for sight-seers and especially for underwater photographers, are numerous and the contrast between the barren desert land and the jewelled reefs of the Sinai is a diving holiday that coral and fish lovers will never forget.

Generally speaking it's always best to travel in a group to far off countries for diving. The reasons are obvious. First, all of the

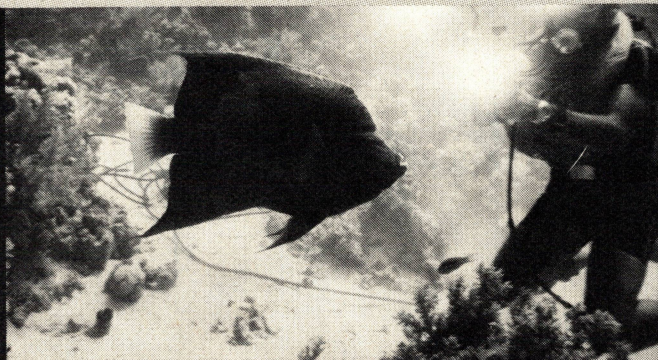
travel arrangements have been made by the tour operator and there is no last minute scurrying around for tickets or unexpected delays. Secondly, living accommodations are prearranged through the tour agency. And third, the diving has usually been scouted out by a tour operator, ensuring you of the very best and greatest number of dives. Diving out of Sharm el Shiekh was no exception. Red Sea Divers has taken the right steps in facing the problem of communication with the American traveler. The company has appointed Oren Most as its U.S. representative. Oren, former executive director of the Israeli Federation for Underwater Activities and later on the marketing manager of Red Sea Divers in Tel Aviv, is conducting the "1979 Red Sea Year" campaign in the U.S.

This campaign is aimed at encouraging American divers to travel to the Red Sea, and is backed by Red Sea Divers, El Al Airlines, Israeli Ministry of Tourism and the major American tour operators in the diving travel market. Your inquiries about the Red Sea and booking a tour there should be forwarded to: Red Sea Divers, U.S. Representative — Oren Most, 9200 Sunset Boulevard, Penthouse 9, Los Angeles, CA 90069. Telephone: (213) 930-0137. Oren will answer all of your questions, mail you the Red Sea Divers information packet and can book your tour. It is also worth your while to read the *Red Sea Diver's Guide*, by Shlomo Cohen.

We stayed at the Sharm Marina Hotel. It consists of 30 bungalows that look as though they were designed for the year 2001. The 100 standard rooms at the hotel are a little roomier. The bungalows and hotel are air-conditioned. The accommodations and dive services are quite reasonably priced, starting at \$60 a day double-occupancy with two meals, two dives, a tank and a refill, a weightbelt and transportation to the dive site with a professional guide.

Lunch can be purchased at the dive center or you can get a box lunch on the boat. The food at the Sharm Marina Hotel is plentiful and nourishing, but rather bland by American standards. Spicier meals are dished up regularly at the dive center located just three minutes away from the hotel.

The tip of the Sinai peninsula attracts a great number of transients. People from all over the world travel here. The Red Sea has become the most popular dive area for Europeans. One evening you can be having a drink and carrying on a serious conversation with a dedicated German or Swedish underwater photographer, and, the following night you might meet an old friend from Boise, Idaho. El Al, Israeli Airlines, operates direct flights on a daily basis from New York to Israel and will soon serve passengers going to Israel from Los Angeles, Chicago and Miami. The 11 hour flight on a comfortable 747 Jumbo Jet departs from New York in the evening and arrives in Tel Aviv the next afternoon. Wrist watches should be set six hours ahead. The inter-country airline, Arkia, makes one stop in Eliat and then flies directly to the Offira Airport just outside of



The marvelous queen angel — a vibrant blue fish decorated with yellow.



A beached Arab dhow rests just 100 yards from the abandoned city of A-tur.



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RED SEA



Sharm. We found, as have others who travel in groups, that both El Al and Arkia officials are tremendously helpful and courteous, going out of their way to make sure their customers are comfortable and well looked after.

There are a number of organizations leading tours to the Red Sea Divers Centers. In addition to extensive diving in the Red Sea, some of these include a tour of Jerusalem and Tel Aviv. The names and addresses of some of the more popular ones are included in the list.

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San Francisco, California 94109

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San Diego, California 92101

Sea Life Discovery
19915 Oakmont Drive
Los Gatos, California 95030

Poseidon Venture Tours
359 San Miguel Drive
Newport Beach, California 92660

As I write this on the plane at the end of our adventure, I gaze down at a sandy desert with mountain ridges equally hot and stark, and marvel at the incredible contrast between this parched land and the wonderful aquarium that snuggles up against the shore. A new chapter in my dive life has come to a close. But, it's also a beginning. I am already planning a return trip. SHALOM! >☺



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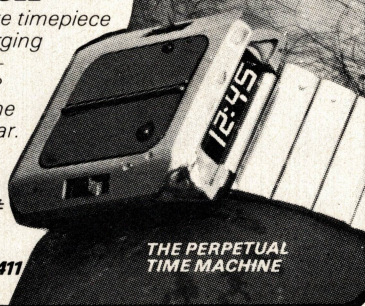
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THE PERPETUAL TIME MACHINE

UNDERWATER FORUM

(Continued from Page 6)

pated that members will arrange visits with each other to share dive spots and good times.

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U/W Works

The Underwater Works staff was very surprised and at first delighted to see the article on the shop [PADI's Five Star Program] in the November '78 issue [p. 34] of SKIN DIVER, especially behind such a beautiful cover. However, that delight turned to mortification on seeing the only quote attributed to me was, "We have so much business at this time we think we'll just stop taking new customers."

I have never made any such declaration. What I did do was discuss in great detail with Mr. [Bryan] Jonson, the author, the problem of maintaining the quality of personal relationships with our customers we wanted to have while still growing. I concluded that if it was necessary to limit either quality or quantity that we would limit our growth. It has been two years since I talked with the author and in the meantime we have done just that without turning away a diver/friend.

We have not expanded at the rate that could have been possible if we had turned Underwater Works into a scuba diver certification factory. The important point for potential Five Star shops is that sometimes the choice is between growth in the short run or limited long-term growth and full quality control while maintaining a personal base with customers. I feel this is a very important business concept for dive shop owners and the article was supposedly about what the Five Star rating can mean for business.

CHAUNCEY CHAPMAN, III
COLUMBIA, S.C.

Holiday Inn Reply

I would very much like to reply to the letter in your November '78 edition from Mr. William A. Klein, regarding the Grand Caymanian Holiday Inn.

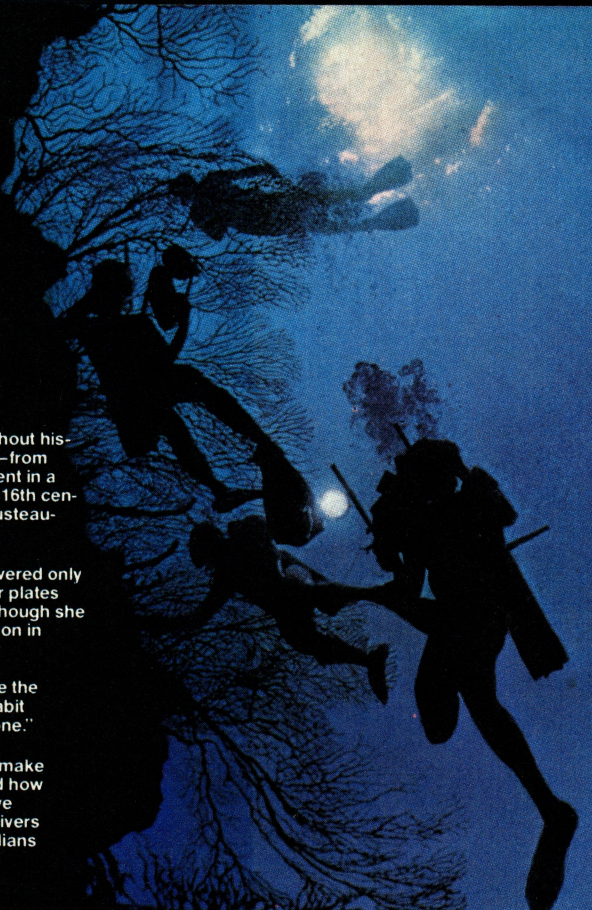
As a privately owned and operated Holiday Inn, we constantly strive to be the number one hotel bearing that name, and are indeed very proud of our record in the Cayman Islands over the past six years. If Mr. Klein were to reread his letter he

(Continued on Page 28)

Sail with Calypso! Dive with Cousteau!



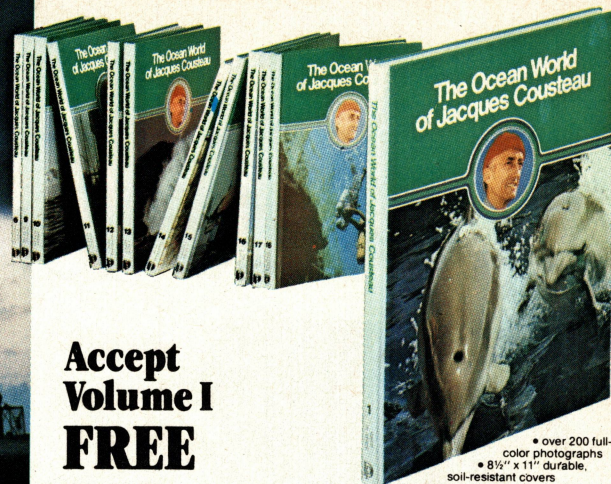
- See man's attempts throughout history to breathe under water—from Alexander the Great's descent in a wooden bucket...to fanciful 16th century diving bells...to the Cousteau-Gagnan aqualung.
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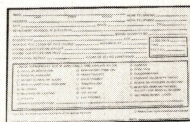
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SDM SCUBA QUIZ

TABLE I
NO DECOMPRESSION

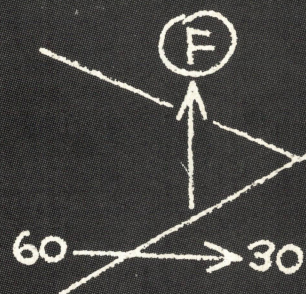
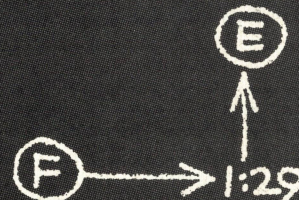


TABLE II



Category: Decompression

By Dennis Graver

Sport divers should not exceed 130 feet in depth and should plan all dives to be no-decompression dives. If, for some reason, however, divers should unexpectedly wind up in a situation requiring emergency decompression, they should know the procedures involved. Test your knowledge of decompression diving by answering the following questions. The answers are on the next page.

1. To determine any needed decompression for a dive to 82 feet for 36 minutes, you should refer to a schedule of:

- ☐ A. 80 feet for 30 minutes
- ☐ B. 80 feet for 40 minutes
- ☐ C. 90 feet for 30 minutes
- ☐ D. 90 feet for 40 minutes

2. The depth of a decompression stop is measured from the:

- ☐ A. Top of the diver's head to the surface
- ☐ B. Diver's regulator mouthpiece to the surface
- ☐ C. Diver's chest to the surface
- ☐ D. Diver's feet to the surface

3. As a group F diver you plan a dive to 60 feet for 20 minutes. At the end of the dive, however, you discover you have been diving at 81 feet. You should now ascend and:

- ☐ A. Decompress at 10 ft. for 18 minutes
- ☐ B. Decompress at 10 ft. for 25 minutes
- ☐ C. Decompress at 10 ft. until your air is gone
- ☐ D. Plan your next dive

4. For a dive of 26 minutes at 120 feet, the total ascent time required is:

- ☐ A. 2 minutes
- ☐ B. 14 minutes
- ☐ C. 16 minutes
- ☐ D. 32 minutes

5. Following a dive to 95 feet for 32 minutes, a diver's repetitive group designation would be:

- ☐ A. I
- ☐ B. J
- ☐ C. K
- ☐ D. L

6. Even though you worked hard during a 30 minute dive to 90 feet, you became quite chilled. During ascent you should:

- ☐ A. Exercise to stimulate circulation
- ☐ B. Decompress at 10 feet for seven minutes
- ☐ C. Decompress at 10 feet for 15 minutes
- ☐ D. Breathe shallowly to reduce respiratory heat loss

7. A diver stops at 40 feet for 1/4 of the time required at the 10 foot stop, at 30 feet for 1/3 of the 10 foot stop time, at 20 feet for 1/2 of the 10 foot stop time, and at 10 feet for 1 1/2 times the 10 foot stop time. This is done because:

- ☐ A. It is the latest approved decompression method
- ☐ B. Initial decompression was omitted
- ☐ C. It provides a decompression safety factor
- ☐ D. The 10 foot stop is crowded with divers

8. Which of the following dive schedules is *least* likely to result in decompression sickness for a dive to 90 feet?

- ☐ A. A single 30 minute dive
- ☐ B. Two 14 minute dives with no surface interval
- ☐ C. Three eight minute dives with no surface intervals

9. If you attain a group J or greater repetitive group designation, you should:

- ☐ A. Not dive for at least 12 hours
- ☐ B. Have someone monitor you
- ☐ C. Be alert for bends symptoms
- ☐ D. All of the above

10. If you have made a dive requiring a decompression stop, you should not dive again for at least:

- ☐ A. 2 hours
- ☐ B. 12 hours
- ☐ C. 24 hours
- ☐ D. 72 hours

SDM SCUBA QUIZ

TABLE I
NO DECOMPRESSION

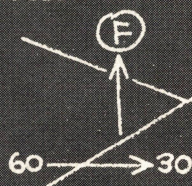
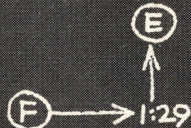


TABLE II



Answers: Decompression

1. D. 90 feet for 40 minutes.

A standard rule for the decompression tables is to use the exact or next greater number for time and depth. It is important to comply with this rule when planning and figuring dives.

2. C. Diver's chest to the surface.

Elimination of accumulated system nitrogen takes place in the lungs. It is important that the lungs remain as close as possible to the decompression stop level for optimum outgassing.

3. A. Decompress at ten feet for 18 minutes.

The residual nitrogen time (RNT) for a group F diver at 60 feet is 36 minutes, allowing 24 minutes of bottom time without decompression. However, a group F diver has an RNT of 24 minutes at 90 feet with only six minutes of no-decompression time available. A total bottom time of 24 minutes plus 20 minutes of actual bottom time results in a dive schedule of 90/50, requiring the decompression stated.

4. C. 16 minutes.

This dive schedule (120/30) requires decompression of 14 minutes at 10 feet. An additional two minutes are also required to ascend the 120 feet at the specified rate of 60 feet per minute.

5. C. K.

This is another decompression dive schedule (100/40). Upon completion of the required decompression (15 minutes at 10 feet), the diver will have a repetitive group K designation.

6. C. Decompress at 10 feet for 15 minutes.

For cold or hard-working dives, the next deeper and longer schedule is to be used. This 90/30 dive should be considered a 100/40 dive.

7. B. Initial decompression was omitted.

If a diver surfaces from a dive and discovers decompression was inadequate or omitted, and has no symptoms of the bends, the diver has a maximum of five minutes to re-enter the water and carry out the procedure outlined in the question.

8. A. A single 30 minute dive.

Even though the total bottom time is less for the three eight minute dives than for the single 30 minute dive, decompression sickness is more likely for the three short dives due to formation of "silent bubbles" during the repeated ascents. Bounce dives, particularly at the end of repetitive dives, should be discouraged or avoided.

9. D. All of the above.

Remember that the Navy tables were not designed for recreational divers. We must use the tables conservatively, not pushing their limits. If you have accumulated a large amount of residual nitrogen, play it safe. Being bent isn't fun.

10. C. 24 hours.

Physiologists have identified tissues which are much slower to rid themselves of nitrogen than those used as models for derivation of the Navy tables. If you had to decompress (as an emergency requirement rather than an intended situation) wait at least 24 hours before diving again.

Decompression is serious business for recreational divers and must be avoided whenever possible. Decompression sickness can turn fun into tragedy and can result in permanent disability. Susceptibility varies from person to person and within the same person from day to day. Know how to decompress in case you should need to, but absolutely avoid decompression dives otherwise.

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June 9-17

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June 15-23

San Diego, CA

June 18-29

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Medifacts

BY CHARLES V. BROWN, M.D.

KNOWING YOUR LIMITATIONS

One of the cardinal rules of sport diving is: Know your limitations. In this month's Medifacts Dr. Brown sheds light on a number of interesting problems — some which could severely limit or even preclude a person's diving; others which, with the proper precautions, should not necessarily be deterrents.

CONTRADINDICATIONS

Gerard Sterling read an article which detailed several conditions contraindicating diving. He would like to know why the following would rule out participation in scuba diving: chronic rhinitis (inflammation of nasal mucous membranes), markedly enlarged hilar lymph nodes, bleb, varicose veins, hemorrhoids, anemia, peptic ulcer, chronic or recurrent genito-urinary disease, active or chronic skin disease, and diabetes.

Answer: Authorities are not in full agreement as to what disorders should rule out diving or how severe a disorder must be before it rules out diving. The following is my own opinion.

Chronic rhinitis affects diving only if it interferes with clearing the middle ear or sinuses.

Big hilar nodes (the lymph nodes at the roots of the lungs) suggest a serious lung disorder. No diving till a medical investigation rules out danger.

A bleb is an enlarged air pocket, just under the surface of the lung, usually found by X-ray. As it might rupture with little provocation, resulting in pneumothorax, it should preclude diving.

Varicose veins and hemorrhoids (which are really varicose veins of the rectum) are potential sites of sluggish blood flow and therefore of clotting. However, diving exercises the legs and negates the distension of veins due to gravity. Also, a wetsuit provides elastic support for distended leg veins. As all of these factors tend to reduce the chance of clotting, I would not discourage diving.

Anemia, peptic ulcer, genito-urinary disease, and skin disease are all relative contraindications to diving. Mild cases may pose little or no problem. However, if they make you feel at all ill, or if you find that diving bothers you or aggravates the disorder, you should stay dry. Consultation with a physician is essential.

A diabetic who requires insulin or pills runs the risk of low blood sugar with weakness or unconsciousness in the water. He or she should not dive at all, or only with conditions carefully controlled.

DIABETIC DIVERS

Matt Andrews has a friend who carries

a plastic pop-top bottle of syrup with her when diving. She is a well controlled diabetic and quite athletic normally. He knows of other diabetic divers who do not allow the disease to interfere with their lifestyle. Why then is diabetes so often considered a contraindication?

Answer: You're right — some diabetics dive and have no trouble. They accept, knowingly or otherwise, the risks we described. That risk can be very small if the diabetic is well controlled and the diving well planned. Their disease could even have a protective value in that conscientious diabetics, realizing they are at risk, might be more conservative and thereby avoid much greater risks that other divers accept. On the other hand, any doctor can confirm that many diabetics resent their disease and go through phases when they behave as though it weren't important. Such neglect topside often leads to a trip to the emergency room; underwater, it could easily be a trip to the morgue.

Strategies to prevent insulin reactions do exist. You can simply omit insulin before diving. But if you have already taken it when the invitation comes for a strenuous but super-neat dive, will you say no? You can take along a squeeze bottle of syrup, but even on land diabetics with candy in their pockets occasionally pass out before realizing they're in trouble. The distractions of diving could magnify this danger. Even if you recognize a reaction coming on, you may by then be too clumsy to perform the manipulations necessary to open the bottle and drink the syrup. Or you could pass out before the syrup has time to work. The risk varies greatly with the individual, but since we don't know for whom it will be significant, we must generalize and suspect all.

Philosophically, I believe that the fully informed diabetic should be allowed to decide for himself about diving. But practically, problems arise. Can we know that he is fully informed? We lack statistics to quantify the risk. Has he the education and the maturity to understand the risk? If he should have an accident, it could be impossible to prove that his diabetes was not a factor. The doctor who signed his dive medical exam and the instructor who signed for his certification could incur tremendous financial liability.

If I encountered a diabetic who was already an experienced diver, I'd try to acquaint him with the hazards. But if asked to certify an insulin-dependent diabetic

(Continued on Page 46)

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HAWAIIAN GOLD



Rare Coral Found at 1200 Feet

By Ellsworth Boyd

Bo Bartko is a prospector who seldom returns empty-handed. Or perhaps I should say empty "clawed," because that's the way he mines his gold, 1200 feet beneath the sea.

Piloting a 17 foot long submersible called STAR II, equipped with a mechanical claw and wire basket, Bartko harvests gold coral — a rare treasure from the deep. Averaging 60 pounds per day from a mile and a half long bed six miles off Makapuu, Hawaii, the soft-spoken undersea prospector has been striking it rich for over four years.

Bartko is the chief treasure hunter for Maui Divers, Ltd., the world's largest precious coral jewelry manufacturer. Starting with black coral in 1962, Maui Divers discovered pink coral in 1966.

"Gold coral was first discov-

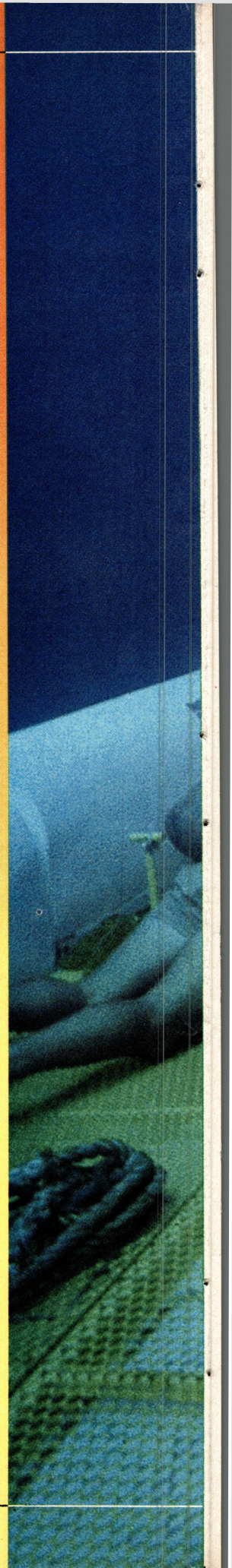
ered in the late 60's," Bartko explained, "but there wasn't much of it, just a few small patches here and there. We stumbled on a big bed of it about five years ago and in the summer of '74 I started harvesting it in large quantities."

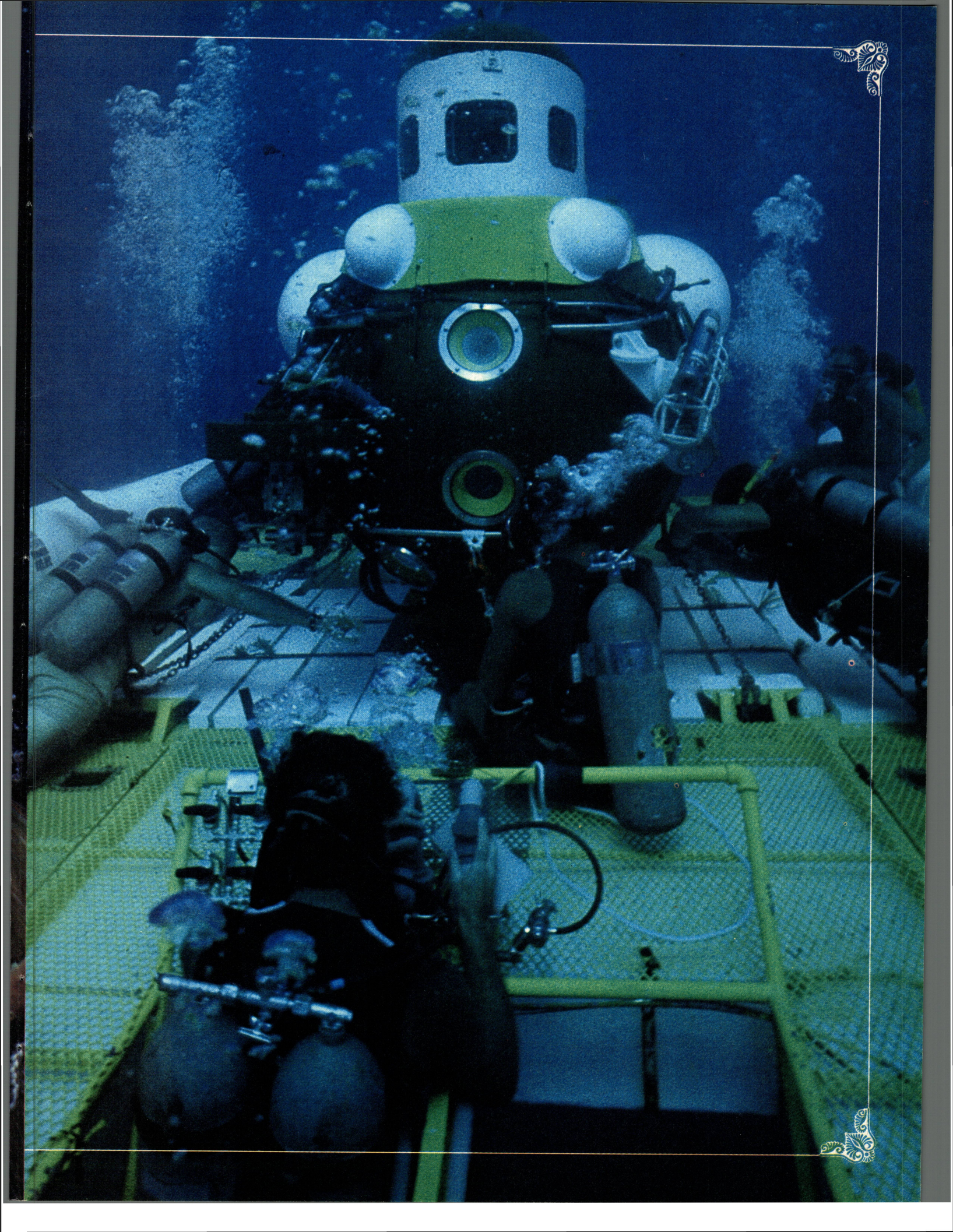
Gold coral includes all species belonging to the genus PARAZOANTHUS and is fully protected by management regulations established through the Department of Land and Natural Resources. Maui Divers has been a staunch supporter of these regulations, working closely with Dr. Richard Grigg, world authority on precious corals.

Working from the University of Hawaii's Institute of Marine Biology, many of Grigg's accomplishments are a result of state and federal funds, the latter from Sea Grant, Washington, D.C. A strong advo-

Photography by Ellsworth Boyd and Maui Divers

At a depth of 60 feet, well below choppy surface waters, support divers release the submersible STAR II from the transport raft. The pilot descends another 1140 feet to the coral.





cate of conservation, he recommended that all harvesting be selective and dredging be outlawed. Grigg and Bartko designed the harvesting claw and collection basket for the *Star II*, ensuring a select approach for the harvest.

Through selective harvesting, the amount picked can be limited so that it doesn't exceed the growth rate of the coral. This permits prolonged use of the coral bed and contributes to its conservation. Grigg isn't worried about the depletion of the coral as long as Maui Divers follows his recommendations, the same ones provided for in the statutes set by the federal government.

Bartko selects only the big mature trees from the forests growing on the Makapuu bed. Others will die of old age while some might succumb to predators, such as sponges, that attach to the coral and suffocate it. Bartko has spotted millions of young, healthy trees in the Makapuu area and feels sure there are plenty of other beds to be found.

At 1200 feet Bartko works the upper edges of the sloping bed, operating a shear that cuts the gold coral tree at its base and a claw that drops it into a large wire basket on the bow of the submersible. Lying face down, Bartko peers through the front porthole for a better view.

Faint traces of sunshine penetrate the depths, like "pale moonlight," engulfing the ghostly undersea garden. With the sub's lights beaming 2000 watts, Bartko creates his own 50 foot visibility one-quarter mile down.

"Marine life is sparse down there," Bartko explains, "mostly crabs, eels, sharks and anglerfish. Sometimes amberjacks swim around the sub, taking advantage of the lights to feed. I see red snappers too, but they're skittish.

"Three to four foot squalus sharks hang on the perimeter, cruising in, then out again. Occasionally I spot an eight to ten footer, appearing then disappearing in the shadows behind the vehicle. Once in awhile a big ray with a ten foot wing-spread will glide past, but most of the creatures are back on the perimeter where it's hard to tell what they are."

Harvesting is best when the currents are slack, but Bartko's best laid plans sometimes go astray. Tides and currents are not always predictable — that's when the veteran pilot has his work cut out for him. I asked him what he would do if the *Star II* were swept into one of the small caves that dot the drop-off.

"I'd just wait and be swept out again," he smiled casually. "It's tidal — what goes in has to come out."

"The *Star II* was built by General Dynamics," he said, "mainly to recover objects and inspect offshore oil rigs. It's got a long tail for stability, making it difficult for me to harvest on a downgrade. It

won't turn quickly either, so I try to line the coral up with the cutter in order to get the tree on the first run.

"If I don't get it on the first try there might be a little cussin'. But if I accidentally drop a nice piece into a crevice, there's lots of cussin' because chances are I'll never retrieve it."

Bartko usually stays down from four to five hours, maintaining radio contact with the mother ship every 30 minutes. He has enough oxygen for 36 hours, but his day's work is limited by the charge in the 20 batteries aboard the sub and how hard they are used. There are three motors — two hp each, that work hardest in strong currents.

When surfacing, the pilot uses compressed air to blow water out of the ballast tanks. In case of mechanical failure he can bob to the surface by manually releasing the 300 pound steel skid attached to the belly of the sub.

A 60 to 80 pound harvest is a good day's strike in the Mother Lode of the Makapuu gold fields. Gold coral is bigger and tougher than pink coral, but its forests are not as dense. The largest gold coral tree Bartko harvested was eight feet high, six inches in diameter at the base. One branch weighed 110 pounds.

"If the batteries didn't wear down," Bartko smiled, "I'd stay down eight hours and never quit. It's just like prospecting for gold — you're always looking for a strike just over the next hill. People can't imagine what I do down there, but I'm busy from the moment the divers break me free."

The divers are Riki Inada, Terry Kerby and Troy Goodman, who launch the sub from the deck of a twin-pontooned raft called an LRT — Launch Recovery Transport vehicle. Towed behind the mother ship, *Holokai*, with the *Star II* chained to its deck, the LRT is flooded down to 60 feet at the dive site. Beneath the choppy surface waters, where the turbulence subsides, the divers unchain the submersible. As it drifts free, Bartko is ready for an added 1140 foot descent. This method of launch, transport, and recovery eliminates problems associated with surface launching in choppy waters.

Wearing twin tanks and medium-size fins, (the smaller the fins the easier it is to walk on the deck of the LRT), the divers swim underwater about 40 yards from the mother ship to the LRT. Although they escape the choppy surface waters, they often encounter strong U/W currents.

To initiate launching, Inada climbs into a small cockpit at the stern of the LRT, waiting for Captain Dave Seefelt or deck hands Roger Gray and Terrell Cook to give the dive signal from the *Holokai*. Inada in turn, signals his support divers to open the vent valves, while he opens the variable ballast vent valves.

Like a slow motion scene from a science fiction movie, the LRT, its strange cargo lashed tightly to the deck — a bespectacled man inside peering out — slowly sinks beneath the surface.

"At 60 feet, in the indigo blue water, it's much calmer," Kerby said, "That's where we get our 'hover,' a perfectly balanced, almost motionless LRT. The pilot maintains the hover while the support divers unchain the *Star II*."

Although it's routine to them, the divers still get a thrill, akin to launching a space capsule, as this strange drama unfolds



Workers (above) buff and finish solid gold mountings as an overhead duct sucks up specks of gold dust from the air. After harvesting, the gold coral (above right) hangs from the ceiling to dry. The precious coral (below right) grows at 1200 feet.

at 60 feet, six miles at sea.

"Bo is real good," Kerby said. "He can take off and land that sub with the greatest of ease. We just guide her off and he gets her underway. Then we blow the ballast and the LRT returns to the surface, still attached by a towing hauser to the *Holokai*. We swim back to the mother ship and wait for Bo to return."

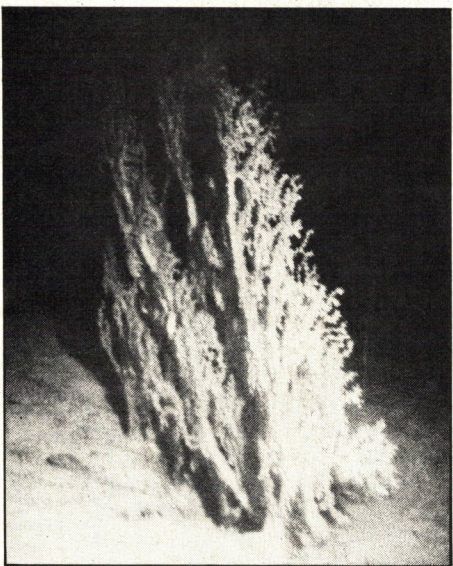
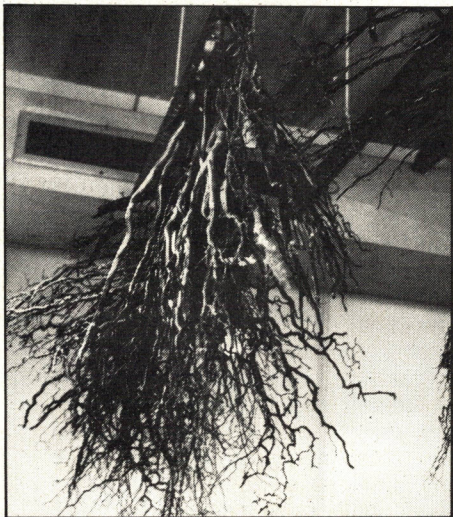
For the divers, launching isn't the only drama of the deep. They're often accompanied by sharks, occasionally a dozen at a time, attracted by the unusual activities in this usually sublime environment.

"We see a lot of white-tip oceanics," Inada said, "sometimes alone or in pairs. About a dozen tigers cruised above us one time when we were hovering and preparing to release the sub. They're likely to appear at launching or recovery, sort of out of nowhere, if you know what I mean. The only time I've seen them come close is during mating season. But we stick together and keep an eye on them. That's when the 40 yard swim back to the ship seems a lot longer!"

When the *Holokai* returns to the dock, its precious cargo is unloaded, sorted and soaked for several days in salt water. When the slime and polyps fall off, the

coral is cleansed with a power hose and shipped to the factory where it is stored in a warm, dry room. Once the moisture has been sapped from it the golden harvest begins its fairytale transformation.

Thanks to wizards like Carl Marsh its disguise is unveiled. A seasoned jewelry designer who apprenticed in England, Marsh and 14 other in-house designers fabricate custom pieces for mass production. Responsible for original designs and models in 14 karat gold, Marsh and his co-workers, through unique planning and production techniques, maintain a



high quality in coral jewelry.

All gold casting is done by the lost wax method. To cast a ring for instance, a wax model is made first. Then plaster of Paris is poured over it. When the plaster dries, heat is applied to melt the wax away. Then gold is poured into the plaster mold, casting an individualized mounting for an exquisite piece of gold coral. The final product, a precise combination of mounting and stones, results in a hand-

made piece of coral jewelry totally different from anything else on the market.

Such a ring, depending on size and quality of the gemstone, retails for \$40 up to \$5,000. The highest priced item may be accented with jade, pearls, sapphires, rubies, opals or emeralds. This is a "one-of-a-kind," piece, but there are other mass production pieces in gold-filled styles that retail for less. The modest prices on these latter pieces enable the retailer to select merchandise which will appeal to a broad cross section of the buying public.

While pink coral is cut wet in order to reduce heat friction, gold coral is cut dry, allowing gem cutters to spot flaws. Gold coral is more versatile than pink or black coral. The colors range from tan to gold-bronze, to greenish-black, flourishing in texture, pattern and "chatoyance" (shah-toy-ants). The latter term is French, meaning "cat's eye" and describes a mysterious moving inner light. It gives the impression of an undulating narrow band of white light generated inside the stone. Bo Bartko sees this too if he turns the sub's lights off.

"Gold coral is bio-luminescent," he says, "in that it produces its own light when agitated, as do many other marine creatures. If I snap the lights off, the formations glow like Christmas trees."

Some of the 200 assembly line workers in the factory (processing gold, pink and black corals) saw, sand, polish and buff the gold coral until a beautiful lustre appears. Then the precious stones are set in the various findings: rings, pendants, pins, tie-tacs, etc. A fascinating part of the factory is the production line room where workers buff and finish the solid gold findings. A large snaking duct arches overhead, gently sucking up tiny specks of gold dust buffed from the findings. Collected on a matted screen, they are too precious to be wasted.

Maui Divers was acquired two years ago by Helena Rubenstein, Inc., the 80 year-old international cosmetics house that became a subsidiary of Colgate-Palmolive in 1973. The precious coral company has become the nucleus of a major new jewelry division of Helena Rubenstein whose products are marketed on a worldwide basis.

Commenting on the acquisition, Clifford D. Slater, president of Maui Divers, said, "This is the best possible development for us. It makes us a stronger company, expands our influence in world markets, and offers us opportunities to diversify and grow faster."

The company has made a major push into posh mainland markets. It has also placed its line in Europe, Asia, South America and the Caribbean.

"In the beginning we approached stores like Tiffany's and Cartier's, and for

awhile we did sell in Tiffany's," Slater said. "We don't do this any more because what we're looking for in a retail outlet is good display and identification with the Maui Divers name — and of course Tiffany's plays down the manufacturer."

"We really go against the pattern of normal jewelry operations. We can trace a gem in a direct line from where the coral grew to Lord and Taylor. You might say our stones have a pedigree," Slater smiled. "The jeweler normally isn't interested in where the coral came from or how it was harvested. By the time it reaches him the stones are anonymous."

Then why does Maui Divers buck the tide? Slater said, "Because it works. Jewelry is a personal item. The more buyers can tell about where it came from, the more they like it."

The sales approach isn't the only thing that works at Maui Divers. In 1968 the company had 25 employees. Fifteen of them are still among the 200 employed there now. The company's largely female manufacturing staff works ten hours a day, four days a week and switched to this four-day work week at the employees' request. There has been no decrease in productivity, but workers have decreased travel time while getting a day off from work and enjoying more time for themselves and their families.

Slater believes in bonuses. He gives them for everything from production improvements to suggestions for reducing absenteeism, which is already low. The firm's annual Christmas party has gained a reputation as one of Honolulu's biggest holiday bashes.

Maui Divers is the only firm in the world that both harvests and processes coral jewelry. No other company makes jewelry from gold coral. Its discovery has touched off a wave of excitement and speculation. Described as "mysterious and unique," gold coral is new and rare in the market and just coming into its own.

Thanks to the fusion of science and industry, another precious underwater resource is benefiting hundreds of workers in Hawaii. It's also beneficial to thousands of jewelry outlets throughout the world, while providing exquisite creations for jewelry lovers everywhere.

Gold is indeed "where you find it," and for Maui Divers it's a deepsea cache formed by millions of colonies of polyps. For Bo Bartko it's a daily challenge, one-quarter mile down, gazing through a porthole at the pristine wilderness that stretches for miles in every direction.

Like he says, "You're always looking for a strike just over the next hill." The search itself is its own reward. Some days he'll hit it and some days he won't. That's the way it is, prospecting for gold in the Makapuu Mother Lode. >

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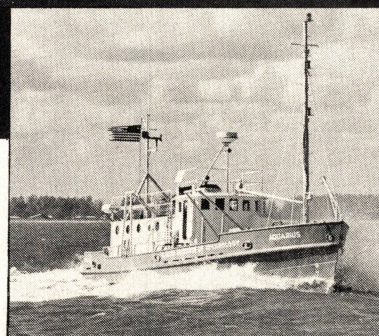
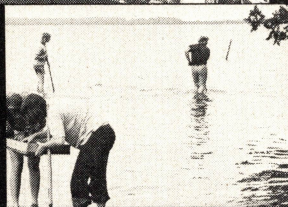
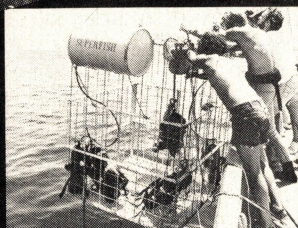
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UNDERWATER FORUM

(Continued from Page 16)

might find, as I did, that he may have grossly exaggerated what could have been an isolated incident, that all of us who travel occasionally experience.

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More Mussels

Having recently just taken a trip to Inverness on Tomales Bay (about an hour north of San Francisco) specifically to gather mussels, I was pleased to find the article, Mussels: A Shellfish Delight, by Herb Taylor in the Nov. '78 issue of SDM.

I first discovered that mussels were edible from a booklet entitled, *Edible? Incredible!*, which lists several varieties of seafoods found along the California coast and recipes. Here I found what is probably my favorite recipe for preparing mussels: I clean them, steam them open and prepare a melted butter and garlic powder sauce. Pour the sauce over the mussels and serve.

I have found that steaming mussels generally takes about 15 minutes. In the past I followed Mr. Taylor's advice to discard those that do not open. But I have also found that a good mussel has the coloration of butter or perhaps a little darker after being steamed. I have found some that are almost gray but, after tasting one of these, I decided that it is best to discard them, too.

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The Rites of Spring

TEXT AND PHOTOGRAPHY BY JOHN FELL

For the Trenton Flying Frogmen, the rites of spring are winning the annual Peterborough Ice Floe Race. The Southern Ontario scuba club did it again in '78, taking the chilly event that kicks off Ontario's scuba season for the third year in a row. Their winning time to kick, float, paddle and navigate their ice floe down two and one-half miles of the fast Otonabee River was 26 minutes and 54 seconds. The Beaver Scuba Club from Ottawa was second with 27 minutes. And third, 30 seconds later, was Seaway Valley Divers of Cornwall.

It was the 15th year that the Trident Underwater Club of Peterborough has been host for the event. Club president Harry Nielsen said, "Nearly 800 divers raced 50 floes down the river this year. We believe it's the largest such event of its kind in the world."

Playboy magazine recently enshrined the Peterborough Ice Floe race in a feature article, calling it the "most prestigious event of its kind in the world."

In 1970, just 20 clubs sent enough divers to work 20 floes. In 1978, Nielsen reported, divers and clubs from Ontario, Quebec, Michigan, Ohio, Illinois, New York, Pennsylvania and the New England states converged on Peterborough for the race. The prize for the diver traveling farthest went to Don White, president of the Poseidon Scuba Club of Moncton, New Brunswick. White, who travelled nearly 1000 miles, helped to kick the floe of the Ajax Scuba Club.

"Just to show you the race isn't fixed," said race committee chairman Don Thompson of the Trident Club, "the prize for slowest time goes to Trident."

Nancy White accepted for the time of one hour, 10 minutes and 35 seconds for the mainly female Trident crew. Most of the Trident men worked safety boats,

helped at the start and finish line and acted as shore marshalls.

At the start of the race, the water was 36° F. The floes were, as usual, cut on Saturday and roped into a small bay for the Sunday race. There was some concern about the floes holding over night, but the 50 ice pancakes held well and lasted for the race.

Thompson said divers using inner tubes have test-run the course in about 24 minutes flat. "The water is fast and the floes are small this year, so we expect a fast race," he said at the starting line. The 26:54 time of the winning Flying Frogmen team is one of the fastest times on record, said Thompson, after the festive awards banquet.

Race rules prohibit use of scuba gear. Full wetsuits, including hoods, boots, gloves or mitts, plus mask, snorkel and BC's are required. The safety record of the event remained intact, as every diver who went into the water came out.

At the finish line, some were keen enough to race across the line and then go right back and dive into the chilly river to play with disintegrating ice floes. Most divers, though, were content to sip cups of hot soup and hurry to get out of wet, cold gear.

Rules also encourage costumes and, this year, the Explorers Club of Pittsburgh won for best costumes. The Explorers floated a working replica of the robot R2D2 from *Star Wars* downriver on their floe and brought the robot to the awards banquet.

If there had been a prize for elan, it should have gone to Todd Shannon of the Mississauga Scuba Club. Shannon piped his club all the way from start to finish, navigating between puffs on his bagpipe and stepped ashore still piping, kilts swinging and dry while his teammates scrambled for the finish line.

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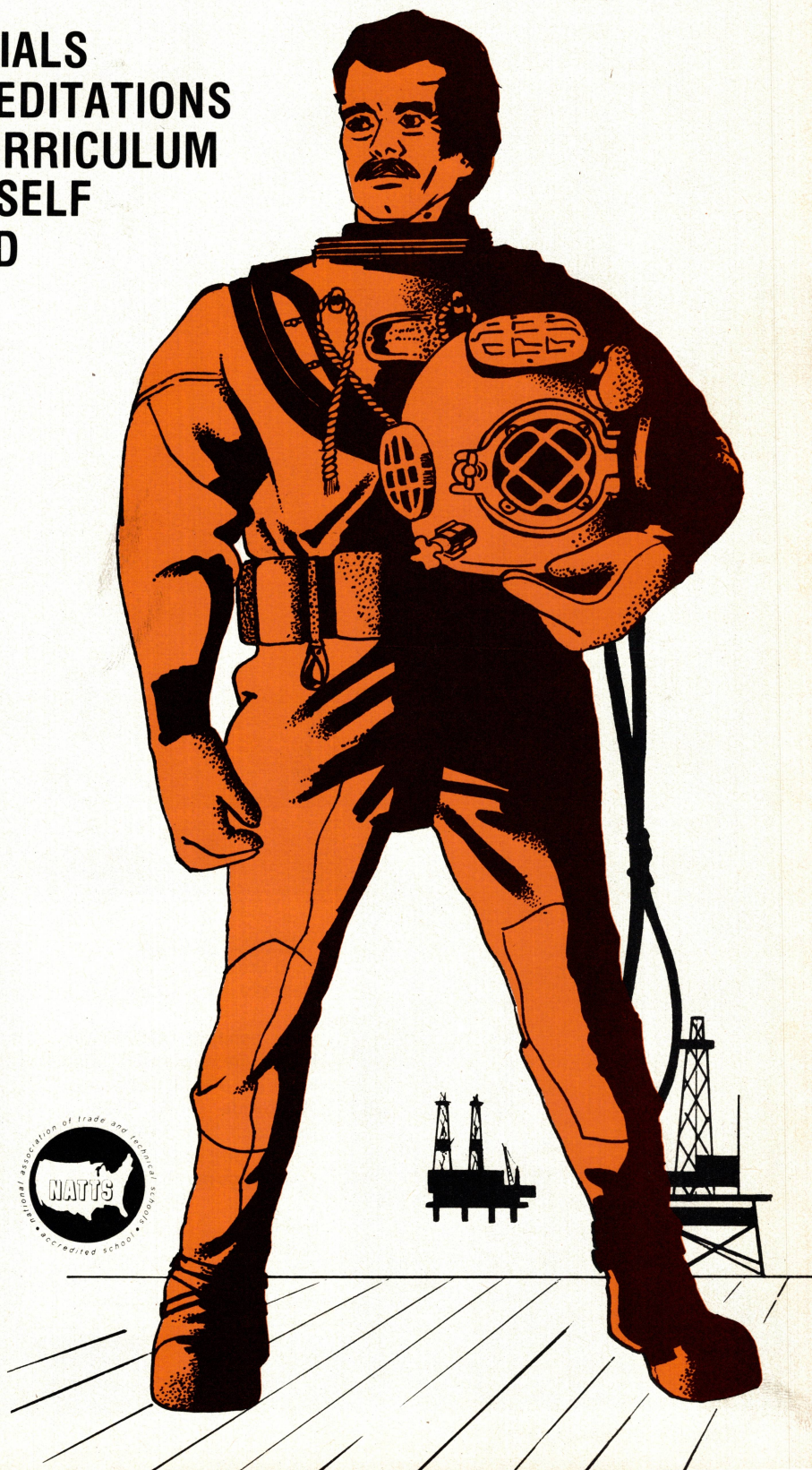
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Shows'n Events

February 3-4 Life in the Sea, Univ. of Calif. Davis campus, Sat. 9 am-5 pm, Sun. 10 am-5 pm (Contact: Dottie Gates, Univ. Ext., Univ. of California, Davis, CA 95616, phone 916-752-3098)

February 24 Down Under '79/Connecticut's 1st Festival of U/W Films featuring Smokey Roberts, Rocky Hill High School, Rocky Hill, CT (Contact: Scuba Shack, 1839 Silas Deane Hwy, Rocky Hill, CT 06067 phone (203) 563-0119)

March 10 Sea Rovers '79/Boston Sea Rovers 25th Annual U/W Clinic, Boston Univ. & John Hancock Hall (Contact: Bunky Hodge, 74 Beech St., Rockland, MA 02370, phone 607-878-8710)

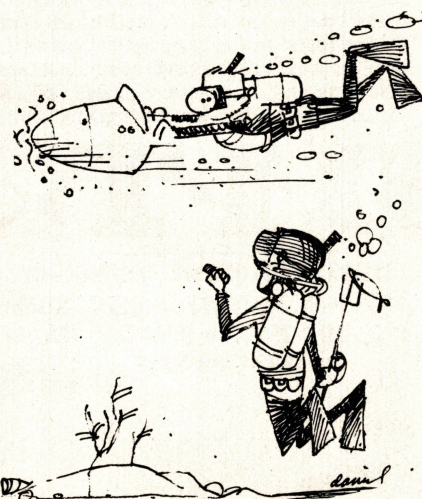
March 17-18 Man & the Sea Conference III, supported by Temple Univ.-Oceanic Society, Philadelphia Maritime Marine (Contact: Dr. Robert Leahy, U/W Education & Research, Temple Univ., Philadelphia, PA 19122, phone 212-787-8720)

April 21 NAUI Underwater '79, Underwater Symposium, Harvard Univ., Cambridge, MA noon-6 pm (Contact: Fred Calhoun, PO Box 291, Back Bay Annex, Boston, MA 02117)

April 21 25th Underwater Film Review, John Hancock Hall, Boston, MA 8 pm (Contact: Fred Calhoun, PO Box 291 Back Bay Annex, Boston, MA 02117)

April 25 Photo contest deadline/Seaspace '79 (Contact: Dick Zingula, PO Box 4362, Houston, TX 77210)

May 19-20 Seaspace '79, University Center Bldg., Univ. of Houston, 9 am-5 pm (Contact: Dick Zingula, PO Box 4362, Houston, TX 77210)



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A black and white photograph of four divers standing on the deck of a boat. From left to right: a man in a light-colored wetsuit and a straw hat, a man in a dark wetsuit with a yellow stripe, a woman in a green and yellow wetsuit, and a woman in a dark wetsuit. They are all wearing Buoyancy Compensators (B.C.s) and holding diving equipment. The background shows the ocean and the boat's railing.

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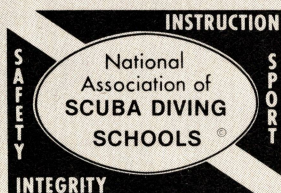
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TEXT AND PHOTOGRAPHY
BY TOM MADERE

*Miles of beautiful white sand beaches . . .
with U/W oases of rock, coral, sunken ships & aircraft
alive with all forms of marine life*

One Florida dive area that little has been written about is the Miracle Strip. It stretches across the Northwest Gulf coast from Panama City to Pensacola and has the most beautiful white sand beaches you will ever find. The sand also covers the bottom of the gulf for miles offshore, making it resemble a vast sunken desert. Fortunately for divers, it is spotted with many oases. These don't have palm trees or pools of fresh water. Instead, they have reefs of rock and coral, sunken ships and aircraft and they are alive with fish, coral, sponges and all other forms of marine life. Just about any species of tropical fish found in the Florida Keys can be found here. Most of the reefs are three to ten miles offshore in depths ranging from 60 to 100 feet. Visibility is seldom less than 40 feet and during summer and fall it can reach 100 feet.

One of the best wreck dives along the Miracle Strip is the *Empire Mica*, a 465 foot British tanker sunk in 1942 by a German U-boat. The *Mica* lies upright in 105 feet of water, 60 miles southeast of Panama City. It is almost completely intact except for the holes blown in it by the torpedoes. Huge jewfish and grouper swim in and out of the passageways. Great schools of amberjack and snapper swim above the wreck. It is a long ride to the *Mica*. The charter boats leave the dock at about one o'clock in the morning and return about seven o'clock in the evening. Bring a big supply of food and drinks. Three dives can be made if you plan properly. For information on trips to the *Mica* contact Hal Brown at the Pro Divers Shop in Panama City.

Only one and one-half miles offshore of Panama City, in 60 feet of water, is Stage II. It was constructed by the U.S. Navy to provide support facilities for Sealab I, which is located 70 feet away. Abandoned by the Navy, Sealab I is now inhabited by creatures of the deep instead of men.

About 25 miles west of Panama City are many limestone reefs just offshore of Phillips Inlet. The charter boats don't



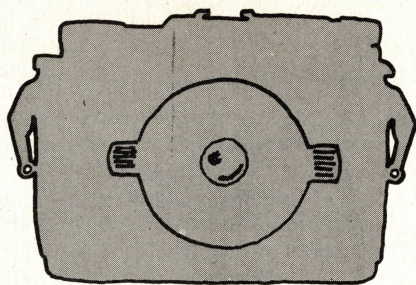
A diver descends into the cargo tank hatch of the *Empire Mica*, a 465 foot British tanker sunk in 1942.

visit here often and these reefs are not as picked over as some of the closer ones. There are rumors that a Spanish galleon sank in this area.

Further to the west on U.S. Highway 98, between Panama City and Pensacola, is the little fishing town of Destin. Within 10 miles of its inlet are dozens and dozens of rock and coral reefs. The cracks and crevices are excellent places to look for spiny and shovel nose lobster. Beautiful shells, such as spiny oysters and murexes, are found on these reefs. There are the wrecks of several small boats and aircraft that make interesting backgrounds for the photographer. Most of the charter captains have made a pact among themselves to keep several of the reefs as natural as possible and do not permit spearfishing or collecting on these reefs. Consequently, they teem with all types and sizes of life.

If spearfishing is your thing there are several artificial reefs constructed of old automobile bodies and other scrap that provide good hunting.

In the spring of 1977 the hull of a 400 foot World War II liberty ship was sunk five miles due south of the fishing pier at Fort Walton beach. This ship is fast be-



TAKE THE NEXT STEP

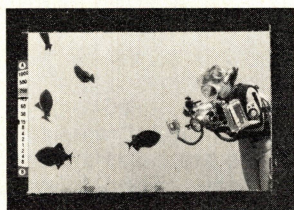
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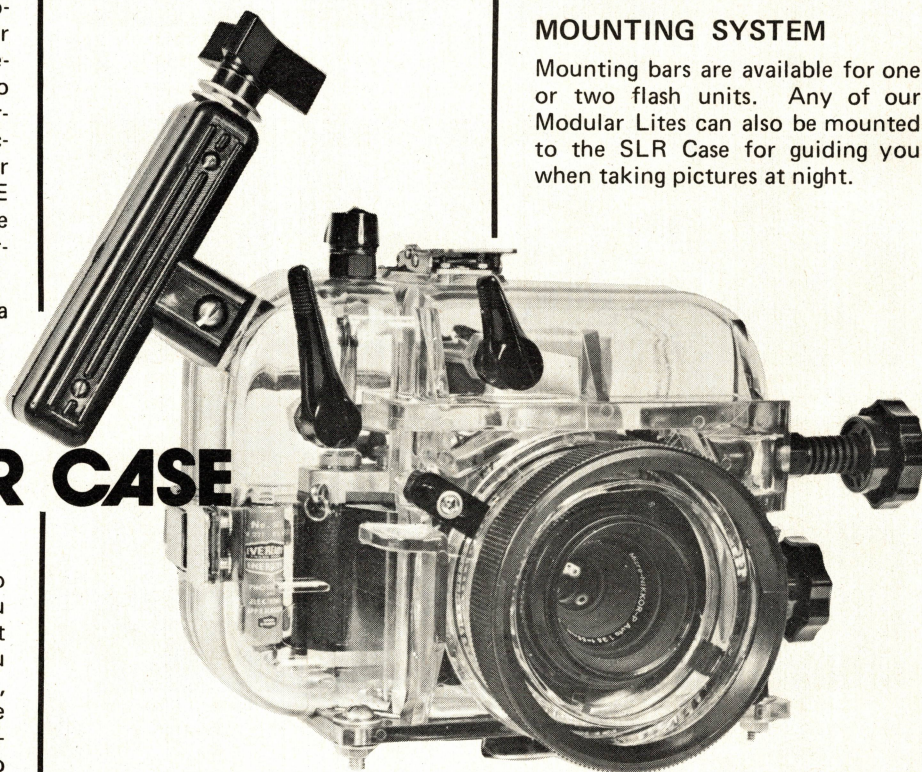
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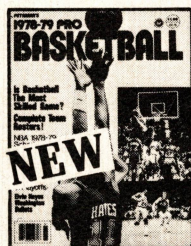
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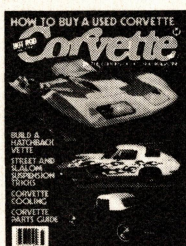
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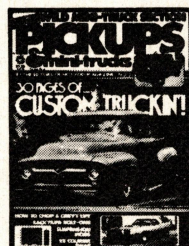
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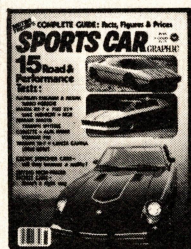
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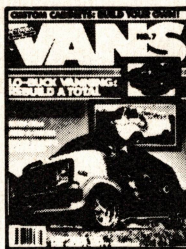
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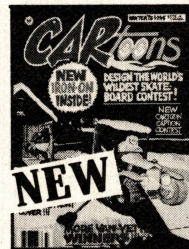
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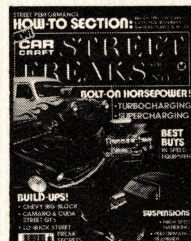
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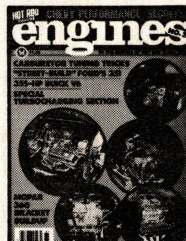
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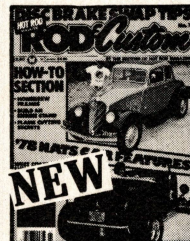
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coming one of the best spots as more and more marine life takes up residence in its massive structure.

Most of the reefs and wrecks are difficult to locate unless you have a boat equipped with a depth recorder and know where to look. But don't worry, there are several charter boats that cater to divers. Their rates are very reasonable and they can be chartered for half day trips to the nearby reefs or all day to the more distant ones.

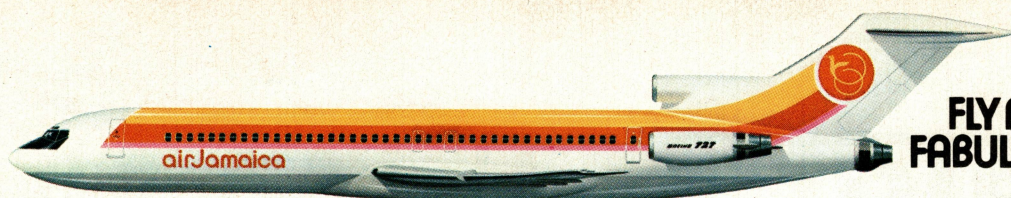
We dived with Captain Malcom Patterson, owner and operator of the charter boat *Triton*. Malcom is a NAUI in-



Visibility along the Miracle Strip is seldom less than 40 feet; in the summer and fall it may hit 100.

structor and knows the bottom of the gulf better than he knows his own backyard. He anchored the *Triton* over one of the protected reefs in 80 feet of clear water. As soon as we broke the surface we could see a school of about 75 large amberjacks slowly circling the reef. It rose up about five feet above the sandy bottom with cracks and holes all around it. Octopuses seemed to be peering out of every hole, along with a few frogfish and small morays. Colorful sponges and corals covered the rocks along with anemones and feather duster worms. Swimming above the flat top of the reef were triggerfish, butterflyfish and one of the largest queen angelfish I have ever seen. Several small groupers followed us around like friendly dogs; their grunting sounded like foghorns. All too soon my tank pressure gauge indicated 500 psi and it was time to start the swim back up the anchor line.

Captain Patterson's *Triton* is Coast Guard licensed to carry six divers. He also has rental equipment and an air compressor on his dock. For information on charters write to Malcom Patterson, P.O. 931, Destin, Florida 32541 or call him at (904) 837-8696.



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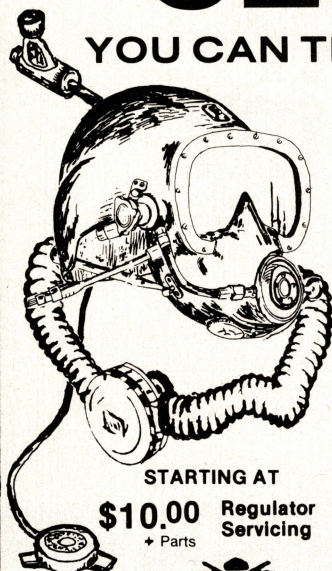
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Not all diving around Destin is off-shore. One favorite inshore spot is the Destin bridge where U.S. Highway 98 crosses the pass between Choctawhatchee Bay and the Gulf of Mexico. On an incoming tide the water under the bridge turns crystal clear. Many sheephead, wrasse and an occasional barracuda may be seen. Oysters can be collected off the bottom and make a fine after dive treat if eaten raw with a little cocktail sauce. Be sure you have a good knife to open them. Currents can be very strong under the bridge at times. Check at the local dive shops for the best time to dive.



The *Empire Mica* lies upright, nearly intact, in 105 feet of water 60 miles southeast of Panama City.

At the mouth of the pass, where it meets the gulf, are two man-made rock jetties. Both can be reached either by small boat or a long walk across the beach. The west jetty is the longest and best to dive around. Blue and stone crabs can be found in almost every crack and crevice. Sheephead and spadefish, by the hundreds, swim among the rocks along with small grunts and wrasses. It is an excellent place for the beginning snorkeler or young children.

Inside Choctawhatchee Bay are several man-made reefs constructed from automobile bodies. They can be reached by small boat and the dive shops can furnish directions on how to locate them. They are good spots for spearfishing, with sheephead, small grouper, and red snapper being most common. Visibility generally runs 15 to 20 feet but can be greater when the tide is up and the gulf waters are in the bay.

As you move farther west toward Pensacola the rock reefs become less numerous but the diving is still good. About nine miles offshore in 85 feet of water, lies the wreck of the Russian freighter *San Pablo*, torpedoed during

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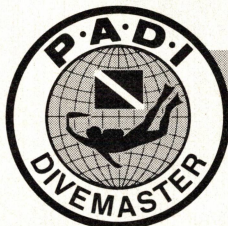
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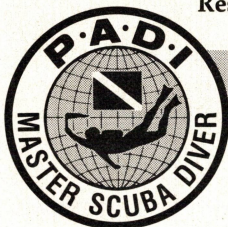


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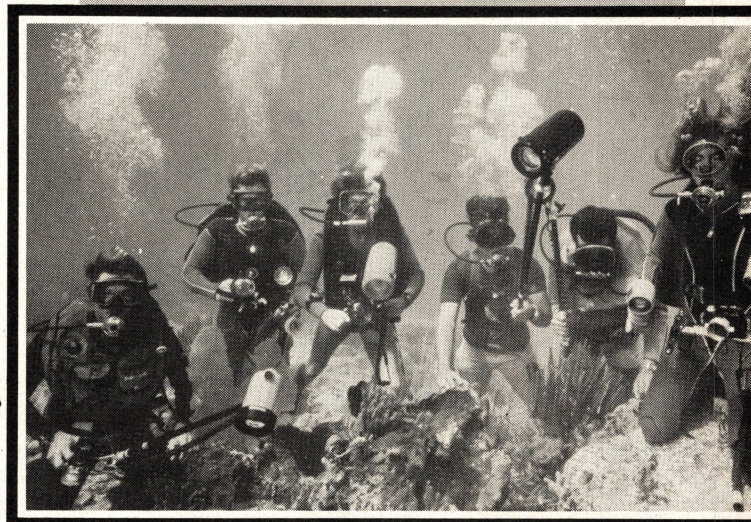
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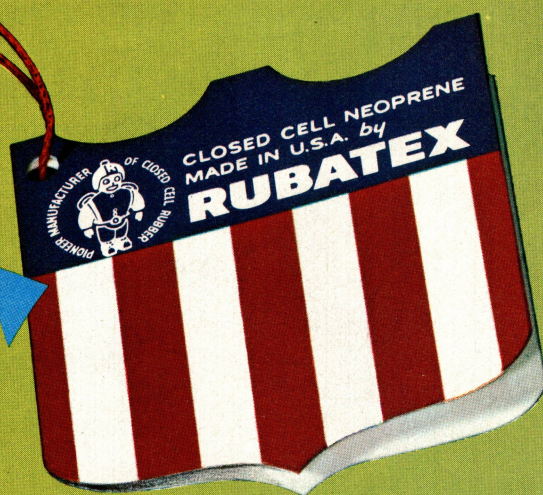
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World War II. Time and the sea have combined to reduce it to a twisted mass of steel but it is home for many fish, both large and small.

Several barges have been sunk by the Pensacola dive shops to make reefs. These are about two miles offshore and excellent for spearfishing.

In 1927 the Navy sank the battleship *Massachusetts* during a bombing demonstration. It lies partially buried in the sand, about two miles south of Pensacola Pass, in 25 feet of water. It can easily be reached by small boat.

Before diving any of the spots mentioned it is best to check at the local dive shops about local regulations and conditions. In some spots, such as under the Destin bridge and jetties, it is illegal to spearfish. Also, there is heavy boat traffic in some areas so a float, flag, and caution are necessary.

If you don't have the time or bucks to make it down to the Florida Keys, try the Miracle Strip for a few days. I am sure you will be surprised at what you find in this sunken desert.

Miracle Strip Dive Shop List

Skippers Dive Shop
408 E. Wright St.
Pensacola, Fla. 32501

Dive World of Florida
3090 N. Pace Blvd.
Pensacola, Fla. 32505

Ocean Sports
129 Miracle Strip Parkway
Fort Walton, Fla. 32548

The Sea Store
P.O. Box 98
Destin, Fla. 32541

Hydrospace International
5323 N. Lagoon Dr.
Panama City Beach, Fla. 32401

Pro Divers Shop
1218 Beck Ave.
Panama City, Fla. 32401

Ray Manuel Diving
6134 N. 9th Avenue
Pensacola 32504

C & G Divers
137 Harrison Ave.
Panama City, Fla. 32401

Bay Divers Supply
4100 West Highway 98
Panama City, Fla. 32405

Divers Den
4700 E. Highway 98
Panama City, Fla. 32401

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WARM WATER A tropical sea in the midst of a dry desert guarantees personal comfort both on shore and along the 200 miles of continuous fringing coral reefs, where water temperature is between 70°–80°F. throughout the year.

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FANTASTIC VISIBILITY Although experienced Divers have heard it all before, they're still startled to see our dive boats' anchor resting at 200 ft. while adjusting their masks at the surface.

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RED SEA DIVERS We are pioneers in Red Sea Diving and are the largest diving organization in the area. For the past 10 years we have been offering the finest in diving services to guests from all over the world. We operate 2 fully equipped Diving Centers: Red Sea Divers – Eilat, at the Gateway to the Red Sea and Red Sea Divers – Sharm el Sheikh, in the heart of the finest diving country to be found anywhere in the world.

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We have special programs for all interested Divers and groups. For complete information about our Boat diving adventures, Sinai safaris and famous "Red Sea Divers Guide" please send us the attached post card. Along with the answers to all your questions we will send you a small token from your friends in the Red Sea.

Contact our American representative: **Mr. Oren Most** 9200 Sunset Blvd. PH-9 Los Angeles, Calif. Tel (213) 9300137 Cable Seatelex, or **Red Sea Divers El Al Bldg.** Ben Yehuda St. 32, Tel Aviv, suite 506, Tel. 295529, 291858, Telex 32470 COIN I.L. AT. DIVERS.

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DR. EUGENIE CLARKE, ichthyologist, author: "If I could dive in only one spot in the world, I would choose Ras Muhammed".

DAVID DOUBILET, u/w photographer: "The reefs of Sharm combine the best elements of the finest reefs found the world over".

JACK MCKENNEY, film maker, past editor SDM: "If I had to choose one place to spend the rest of my diving days it would be the Tiran Straits".

DR. HANS HAAS, author, explorer, marine scientist: "The glimmering vision that rose up to meet me from the depths took my breath away."

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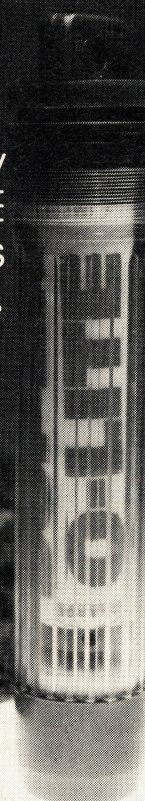
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Film Festivals 'n Symposia

NAUI SYMPOSIUM

The 1979 NAUI Underwater Symposium is scheduled for April 21 at Harvard University's Science Center, Cambridge, Massachusetts. Starting at 12:00 noon and continuing through until 6:00 pm, the Underwater Symposium will feature a series of in-depth presentations on diving and the marine sciences. Lectures, augmented by films and slides, will cover such topics as: How To Get Involved In Commercial Diving; Octopus and Barracuda . . . Friend or Foe; Diving the Bahama Blue Holes; An Objective Evaluation of So-Called Buoyancy Compensators; Love Life of the New England Lobster, and Diving Physiology.

The Underwater Film Review will take place at 8:00 pm at John Hancock Hall,



Berkeley Street, Boston, Massachusetts. It will feature the films of John Stoneman, award winning cinematographer and motion picture film director. Stoneman is President of Mako Films Ltd., Canada's leading underwater motion picture company. Master of ceremonies, Fred Calhoun, will also premiere his new film, *Diving In New England*.

Tickets for the Underwater Symposium (\$4 each) and the Film Review (\$4 each) may be purchased at the door on the day of the program or may be acquired in advance by writing: Fred Calhoun, PO Box 291, Back Bay Annex, Boston, MA 02117. Checks payable to NAUI. 

U/W EXPO 79

Underwater Expo '79 will be held in the West Palm Beach Auditorium, February

16-18, 1979. The first show of its kind in south Florida, it will feature displays of artifacts and other marine-related exhibits including commercial exhibits of salt-water aquariums, shell collections and shellcraft, dive gear and dive resorts, jewelry and other products inspired by the sea. Exhibits will be open from 10:00 am to 10:00 pm on Friday and Saturday and 10:00 am to 6:00 pm on Sunday. Admission is \$2 daily.

Information about the show and exhibit space may be obtained from show chairman Dr. Marvin Glickstein, P.O. Box 14554, North Palm Beach, FL 33408. Phone (305) 833-8604. >

UNDERWATER CANADA 79

On March 30, 31 and April 1, 1979, Underwater Canada '79 will be presented at the Skyline Hotel in Toronto, Ontario. Sponsored by the Ontario Underwater Council, this show has been proclaimed Canada's foremost U/W exhibition.

For information and tickets, contact: Ontario U/W Council, 559 Jarvis St., Toronto, Ontario, M4Y 2J1, Canada. >

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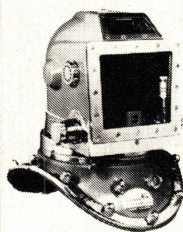
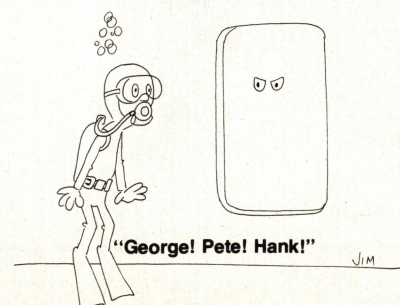
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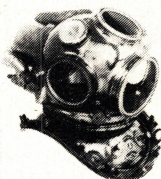


No other career offers the international adventure and excitement of deep sea diving. Besides, if you're already diving, why not make a career of it!

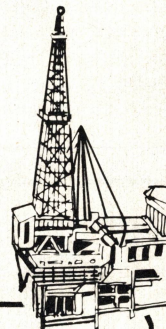
And the pay for well-trained deep sea divers is high — about \$200 a day on the West Coast to about \$125 a day in the East. Pay is still higher for work overseas where the demand for qualified deep sea divers is growing rapidly. You can literally pick any part of the world where you want to work.

Coastal School of Deep Sea Diving takes pride in being the oldest, largest, best equipped and most highly regarded deep sea diving school in the world. During the past 29, years Coastal has trained more men and produced more internationally successful deep sea divers than any other organization in the world.

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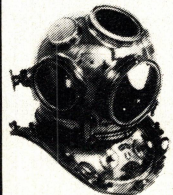
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SD-29

DIV-AK GETS SEA MARK SPEARGUNS

Ed Betts, president of DIV-AK, Inc., has announced the acquisition of Sea Mark Guns. Now DIV-AK, in addition to its full line of accessories, will be able to offer spearguns, spears, tips and elastics to the dive industry.

Betts states, "The Sea Mark spear gun facilities have, for many years, provided the industry with the most elite guns on the market. We will continue that tradition." He also outlined the special features of the guns. "The barrels offer three distinct facets. They're constructed in one piece, from muzzle to butt, for better balance; they're grooved, for greater accuracy; and they're foam-filled, which precludes water, prevents corrosion and reduces weight. In addition, our unique silent safety won't frighten fish; the $\frac{3}{8}$ inch steel shaft provides more strength; the 6 inch square butt allows increased loading comfort; and the extra slot lets you use a second elastic."

DIV-AK commenced full production of Sea Mark spearguns in January 1979 and will provide immediate delivery on all orders. For information, write Ed Betts, DIV-AK Inc., 158 Brentwood Rd., Bay Shore, NY 11706.



FISH BOOK

The *Underwater Fish Guide*, written by Shlomo Cohen, author of *Red Sea Diver's Guide*, *Bahamas Diver's Guide* and *The Sea I Love*, was introduced at DEMA in

January by Seapen Books. It contains 76 species of the most common fish of the Red Sea. All are in full color with a brief explanation about each one. With the 80 waterproof pages, divers can take the book along into the water.

Seapen Books also distributes the new dive manual published by the British Sub Aqua Club.

For information about these and other Seapen publications, write to: Seapen Books, 9200 Sunset Blvd., Penthouse 9, Los Angeles, CA 90069.

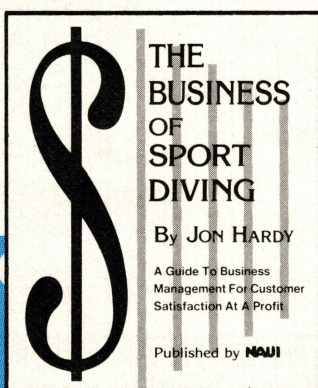
PADI SPECIALIST COURSE

The PADI International College, in San Diego, California, will offer a Retail Dive Store Operations and Management Course for instructors, divers, and non-divers, 18 years of age, who are employed or seeking employment in retail dive stores.

The two week resident course is an intensive 80 hours of training with special emphasis on salesmanship. Also, students are taught business management, operations, credit, financing, inventory control and employee/employer relationships.

The new specialist course is offered five times a year. The next class will convene February 26, 1979.

Full particulars may be obtained by writing to: PADI International College in California, Inc., 1310 Rosecrans St., (Point Loma) San Diego, CA 92106.



124 pages
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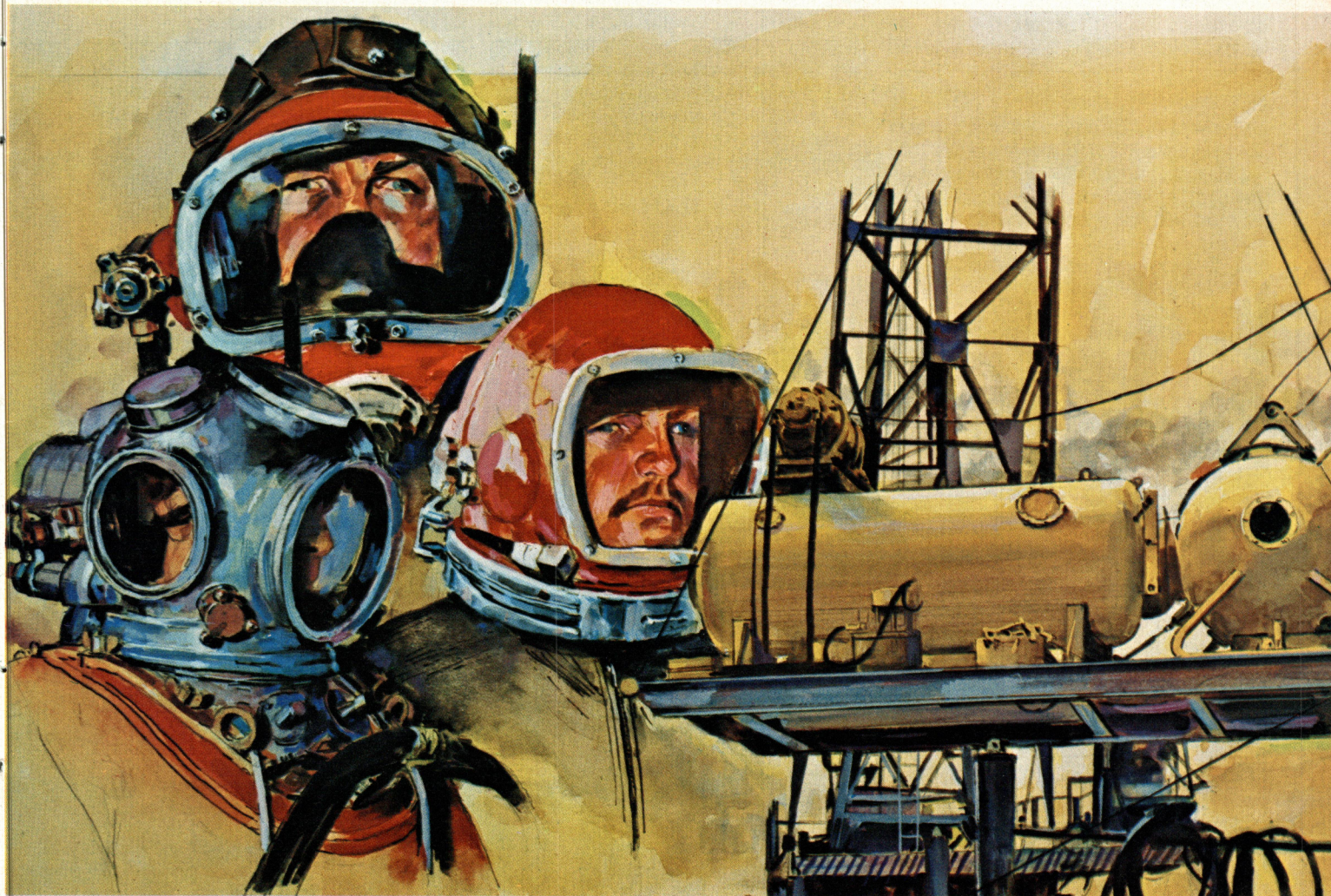
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Experts report that the current energy crisis will get worse. Our oil shortage is real, and has meant a boom in offshore drilling leases. Offshore oilfield diving industry leaders say they need hundreds of additional trained divers by 1980. In addition, the new OSHA regulations require new equipment and specialty-skilled personnel which state and federal level government agencies find beyond their budgets. Thus these agencies are contracting out their diving work to private inland and harbor diving contractors, who in turn are hiring more divers. The 1975-77 Veteran's Administration's vocational school surveys show a phenomenal increase in commercial diving graduate hiring. Commercial Diving Center (CDC) is the biggest supplier of offshore divers completely qualified for **any type** of diving work.

CDC is the diver training division of the world's largest independent diving contractor, Oceaneering International, Inc. (O.I.) O.I. has 28 diving companies around the globe—8 in North American areas and 20 internationally located in 16 foreign countries.

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SD-2/9

MEDIFACTS

(Continued from Page 22)

for a basic course, except possibly in very special cases I'd reluctantly refuse.

ASTHMA ATTACK

Vincent Conte of Miami, Florida, is a skin diving enthusiast who wants to take the big plunge and be certified for scuba. However, throughout childhood he'd have an asthma attack with each chest cold. These were never severe. He's 19 now, in good condition, and has had no symptoms in the past year. Is it safe to proceed with his plans?

Answer: Vincent, that's a knotty question. A nix might restrict you needlessly, while an OK might bring you to grief. As it happens, my son had the same problem. Several years after outgrowing his childhood asthma, he took up scuba and did fine. For you, I have no definite answer, but will offer some suggestions.

In asthma, small airways are partially obstructed by spasm, edema, and excess mucus. Anything that obstructs free outflow of air during ascent through the water can of course cause lung overpressure and air embolism. Obviously, no one should dive during an asthma attack. The problem is that localized areas of obstruction may persist for some time after an attack ends, and especially after

a chest cold. Furthermore, I've often found wheezing in asthmatics who did not believe they were having an attack.

If you've had no symptoms for a year, and normal chest X-rays, your next step is to consult your doctor. Have him or her listen to your chest several times when you feel fine, and also just after a cold or flu. If any wheezing at all is detected, forget diving. If no wheezing is found, but there is still some question about your lungs, you may be referred for pulmonary function tests.

Should you clear all hurdles and earn that C-card, buy yourself some extra insurance by taking the trouble to always ascend slowly, to stay dry for 10 days after a chest cold, and to avoid cigarettes like the plague.

GROWING PAINS?

We receive numerous requests for information concerning the safety of scuba diving for growing children. Have useful studies been done on this subject?

Answer: We know of no studies that bear specifically upon the possible danger of scuba diving for growing children. Theoretically, the excellent circulation and low percentage of body fat in most children is protective against decompression sickness. Their lungs are usually healthier than the adult's — another advantage. On the other hand, their smaller airways would be more easily blocked by a chest cold or asthma, pre-

disposing to alveolar rupture and air embolism.

We know of children who have died, even as young as six years of age. None has had a problem. Still, the numbers involved are too small to draw any conclusions. We believe that the most important prerequisites for a child to dive are that he or she can handle the gear, understands the hazards, is emotionally stable, has good judgment, will not take unwarranted risks, and has competent supervision.

SILICONE IMPLANTS

An Idaho diver, plagued by recurrent breast disease, has been advised to have her breast tissue surgically removed. She wonders whether silicone implants would be a hazard for divers.

Answer: I don't believe that anyone has measured the capacity of silicone to absorb nitrogen. If it amounts to much, then theoretically, nitrogen absorbed at depth could bubble upon ascent, damaging the implant. This would not seriously harm the diver.

Since an implant has no circulation, the only way nitrogen could reach it would be by diffusion from surrounding tissue — in this case, fatty tissue. Since fatty tissue has poor circulation even if silicone can absorb much nitrogen, it seems unlikely that it would get enough during an ordinary sport dive to create any problem. I've no proof, but I suspect that if you de-

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cide on implants, you can still dive safely.

COLD BLISTERS

Mary Molter has an unusual form of cold sensitivity. After exposure, her fingers become red, swollen, and painful from their tips to their mid-points. As the swelling subsides, there is blistering and peeling. The most recent episode took two weeks to heal.

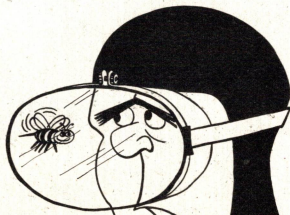
Answer: Exposure to cold causes constriction of skin arterioles both directly and by nerve reflex. This of course is our prime defense against loss of body heat. In a few unfortunate people, arterioles in the fingers are abnormally sensitive to cold — they constrict too completely and for too long a period. The prolonged lack of circulation results in local tissue damage. When the vasoconstriction ends, there is a compensatory vasodilation to repair the oxygen debt and support healing.

The cause of this hypersensitivity to cold is not known. Prevention is primarily a matter of avoiding cold exposure. Dive only in warm water, or wear a suit that really keeps you comfortable. Most important, wear thick neoprene cold water mitts, not gloves. And avoid cigarettes, since nicotine aggravates the problem. Possible approaches to treatment include medications and occasionally surgery. Consult an internist or a vascular surgeon. If you are given a medicine with strong vasodilating activity, keep in mind that it will make you more susceptible to heat loss, and may have other side effects as well. So don't dive till clearing it with your doctor.

HELP FOR AMPUTEES

Several months ago an amputee reader from Puerto Rico asked how he might obtain a special fin for his stump. A diver suggested to us that a prosthesis lab might work up a fitting to attach a standard fin to the stump. An orthopedist could direct one to such a lab.

Answer: James Griffin of Madison, Wisconsin, a below-the-knee amputee, has written to explain how he solved the problem. He puts on a wool stump sock, then buckles on a leather strap (from an old prosthesis) just above the kneecap. He inserts a pad under the strap in front, to ease friction when kicking. He then inserts the stump into a U.S. Divers Rocket Fin and straps it to the leather band, using two side straps instead of one heel strap. A person with amputation above the knee could use a waist belt as the anchoring point. We are grateful for this sharing, and hope it helps someone else.



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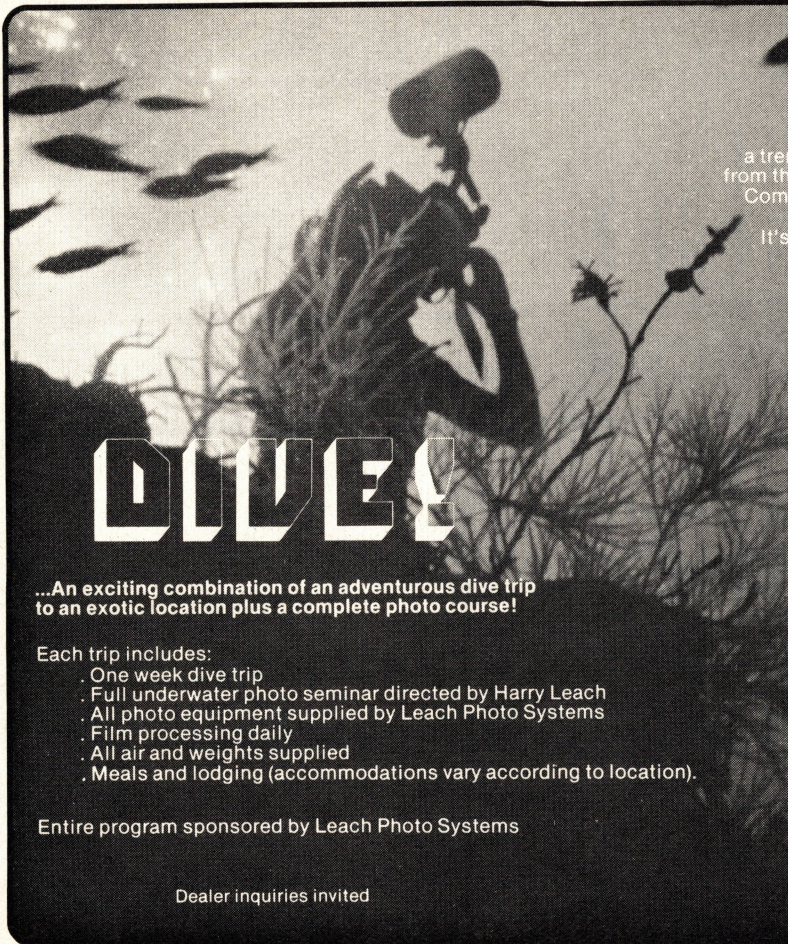
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So whether you want to start at the beginning and take your first underwater photos or you'd like to learn some new techniques using strobe lighting, the DIVE program has something for you! Each day you'll dive and photograph colorful, exciting areas, and each evening you'll see your previous day's class photos--we want you to see how you're improving from day to day.

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A FRIEND IN NEED

BY BILL O'NEAL

The Serene Beauty of Maine's Coast—

A Backdrop for Panic?

In nature, beauty is often a disguise worn by sudden death to beguile its victims. Dazzled by a perfect, brilliant day in Maine and baited by a treasure trove of scallops, my dive buddy and I forgot about a few basic tenets of safety and dived into a net of events which closed so gently around us, we were snared without a hint.

It's impossible to get used to the beauty of the Maine coast, but some days shock a person into a whole new sense of respect, awe, and thankfulness. My buddy, Dennis, and I chose such a day to dive for scallops. To go with the day we chose a picturesque piece of coast near Schoodic Point.

The sun was high, promising optimum visibility, and the tide was near slack. These are two major considerations when diving in Maine, because the visibility is frequently under eight feet, and the tides in northern Maine are the highest in the world, meaning very strong currents. There was a slight wind, which set the lobster buoys to bobbing, but conditions seemed ideal for diving.

I had been to this spot three times looking for scallops and had been foiled three times. On the last occasion I had actually seen some, but my buddy ran out of air before we could pick any up.

Scalloping season ends in April in Maine and doesn't open again until November, so I had all summer to think about those scallops getting fat, waiting to be plucked from the bottom like ripe fruit under a tree. When I was finally able

to return, the season had been open for two weeks, and I was champing at the bit, fearful that the big scalloping boats had dredged their ways through, laying waste to the bottom. I had primed Dennis for this day with tales of bulging scallop bags and gluttonous feasts on these tasty comestibles, which cost around three dollars a pound, if you don't get them yourself.

We quickly worked our way into our wetsuits and, pushing a float of empty anti-freeze bottles ahead of us, were soon paddling out toward an island about 450 yards offshore. Our progress was marked by curious seals and seagulls and even more curious lobstermen, who trust divers less than moonshiners trust "revenooers."

Six months of extrapolating that gradient of scallops had given me a definite opinion as to where the mother lode lay. We decided to save our air until we got out to the site, which I estimated to be about 350 yards offshore. As we got closer, my intuition grew stronger, until finally a divining rod in my head dipped, and I signaled Dennis to dive.

We followed the weighted line from our float down, the air bubbles brightly reflecting what little light penetrated the dark green murk that surrounded us. The water was filled with feathery white gill coverings, recently molted by crabs, and with thousands of slowly turning, translucent ctenophores with rows of pulsing platelets running down their globular bodies.

This debris rushed up at us like a blizzard, as we worked our way along the line. At 50 feet I was beginning to wonder if we hadn't dropped into a hole. Slowly the bottom began to emerge, the way a picture develops on photographic paper in a dark room, and what a picture. There were scallops everywhere.

The little ones rocketed about through the water in spurts, while the big ones sat heavily in the mud, sinking under their own weight, their shells slightly opened, fringed with beardlike rings at their margins. I don't think Dennis and I even looked at each other; we just set to work, stuffing the bags.

For several days the seas had been "roilly," as the lobstermen say, so the bottom was stirred up, cutting visibility to about seven feet. Soon Dennis was out of sight. I managed to find him a couple of times, but then he was gone for good.

We had agreed to surface if we lost sight of each other, so I followed the line up to the float, which I had been towing with me. No one in sight, except a lobsterman tending his traps about two miles away.

I stayed at the surface for a few minutes, then dived back down. A feeling of loneliness began to fill me as I left the sunshine and pushed back down through the viscous green soup to the bottom. I hovered five feet above the floor, just above the dun cloud of mud we had stirred up, but I couldn't see

PHOTOGRAPHY BY BILL O'NEAL AND PAUL TZIMOULIS

anything. With a slight shrug of my conscience I assumed Dennis was all right and that he had been as overcome with greed as I, but was even less responsible. I knew he could easily find me by surfacing, finding the float, and following the line down, so I settled back into the mud and continued decimating the field of scallops.

Shortly, I came upon a huge skate lying on the bottom. I proffered a friendly touch to its back, sending it winnowing off and then gliding without a quiver so close to the bottom that it seemed to be sliding on it. I deemed little else worthy of distracting me from my predation on the scallops, with the exception of the increasingly nagging absence of Dennis, whom I felt certain would have tried to find me by then.

I weighed the situation and each time decided I was being foolish in worrying and that he was probably somewhere gleefully trying to cram more scallops into a bulging bag — but why hadn't he at least contacted me once? It was easy to do, and we had agreed to stick to the buddy system. Each passing minute added weight to a dreary thought, one I had been trying to keep at bay in the dark silence around me.

Finally, my worry eclipsed my greed, and I made for the surface again to tie my dive bag to the float and try to locate Dennis' air bubbles. This proved to be impossible, because like my mood the weather was turning gloomy and lowering. A sharp wind had picked up, buffeting the water and pushing up waves which blocked my view.

I clung to the blue bottles of my float, trying to decide what to do as together the wind pushed me and the turning tide dragged me from the search area. I knew that Dennis must be getting low on air since I was almost out, and I had a larger tank than he did. An icy fear began to grip me, and I began to feel trapped in the ocean.

I kicked with new life, trying to maintain position, but was quickly becoming exhausted and steadily losing ground. The waves were now beginning to break, and the wind was whistling across the water, flattening it in places and then throwing it in the air like a rampant animal. Everything was hopeless at the surface.

Once again I dived, following the white cord down, hoping I could make better headway along the bottom. Reaching the restless floor, I was surprised to find a spare goody bag I had dropped when tying on the full one at the surface. For an instant I thought I might not have lost any ground, but quickly realized the bag must have been floating along beneath me during its descent, the way a parachute moves under a plane before opening up, so the bag could offer me no clue as to how far I had been carried. I left it on the bottom and turned into the current. The vitreous

globes of the ctenophores and the other white flotsam rushed blindly into my face, creating an impression of speed. This belied the few grudging inches I was allowed by the current, which was beginning to knock me around.

I struggled to drag the float along behind, but the line was wrenching at my arm, signaling worsening conditions above. I was trembling with fatigue and practically sobbing for breath. Finally, I had to release the line, feeling an odd sense of anger which melted back into worry and fear as I watched the white rope, the symbolic communication with the surface, floating away from me, turning greener and darker, until it was finally gone.

I once again tried desperately to gain ground, but when I finally looked around, I could still see the empty, white goody bag, sitting on the bottom like a mocking smile. I began trying to crawl forward, but in the mud could get no purchase to pull myself along, so I was dragged, leaving two furrows in the slime. At last the current pulled me across some rocks, and I moored myself to them and clung there, trying to come up with a plan.

My thoughts were racing as fast as the turbulence around me. I couldn't concentrate, and my breathing had become a rapid, shallow rasp. Suddenly, my regulator burst out of my mouth, and I was left in 60 feet of darkness, exhausted, with about half a lungful of air. I had a flashing realization of just how alien I was here; some foolish land creature, suddenly buried under 60 feet of water, one breath away from no breath, and no one around to help me.

A hundred times I've practiced taking my regulator out of my mouth and replacing it while under water. There's a difference when it happens unexpectedly. The current quickly carried the regulator out of my view. I gave a hasty thought to an emergency ascent, but the deep gloom above me and my increasing need to inhale erased that idea.

Sometimes at home, when performing routine jobs like untying a knot or fastening something, I pretend I'm 100 feet down with no air and have to complete the task before I can take another breath. Maybe this simple drill saved me. I reached around and found a hose, but it proved to be my submersible pressure gauge. Trying to stay calm as I was swept along the bottom, I made another grab and came up with the regulator. I crammed it into my mouth and tried to purge it with what little air I had left. That small quantity of air seemed very precious to me, and I parted with it reluctantly, but it proved to be the most important investment of my life. My next breath produced the dry, metallic hiss which had never sounded so good.

Drifting there, shaking with cold and fear, I began to recognize a pattern of behavior described to me several years

earlier during dive classes. It is called panic. At the time I thought the instructor's breaking panic into specific stages was just an attempt to make what he was saying appear scientific, yet, here they were, palpable and real, almost out of a text: inability to concentrate, rapid breathing, the substitution of strength for logic, and shaking.

Remaining calm and recovering my regulator were the first positive actions I had taken since beginning the search. I decided it was time to become a stimulus instead of a response. A discipline settled in. I realized I could do nothing to save Dennis and that my only chance was to get the hell off the bottom. The trip to the surface was a sad one and seemed to take a long time.

When I bobbed up through the waves, I found that I had drifted far from the island, which looked much smaller. Smaller still was a black object, which crawled up on the edge of the island. It could have been a seal, but I was hoping it wasn't. When it returned my frantic waves, I knew it was Dennis.

We stared at each other, out of voice range, which was fortunate, because my words would have ended a friendship right there. I headed for shore in a confusing mixture of rage and relief, composing speeches ranging from a logical lecture on the buddy system to a raging tirade, interspersed with blows about his head.

By the time I reached shore, he had left the island and was laboring toward shore with a full bag of scallops. He was making little headway as the tide carried him out to sea. He had exhausted himself before and had been lucky there was an island conveniently nearby for resting. Now he had a choice to make.

I remember seeing a horrible news film of a group of men trying to hold a dirigible down. It took off, however, lifting them off the ground. All but one of them let go. When he finally let go, he fell hundreds of feet, running in air to a screaming death.

Fortunately, Dennis made the right decision and let go of his scallops. His swimming still seemed labored, but, when I swam out to help him, he was swimming freely, too freely in fact. When we got to shore, I saw he no longer had his air tank. During the transit from the island the tank had slipped out of the backpack, which he had borrowed but failed to check. Although he had grabbed for it, he was so tired he had to jettison it. The look on his face as he climbed out of the water told me it was not necessary to remind him of how helpful a buddy would have been.

Even though we lost our scallops and some equipment, I don't feel we came out on the short end. We learned just how vulnerable we are underwater and that the only edge a diver has against a rather hostile environment is safety, precaution, and preparation. 

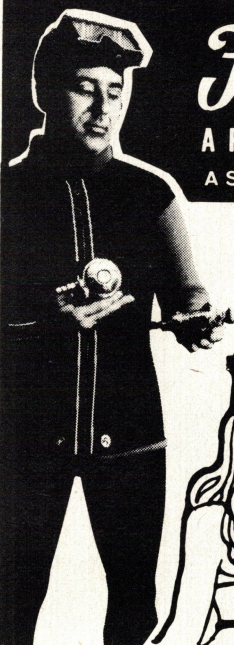
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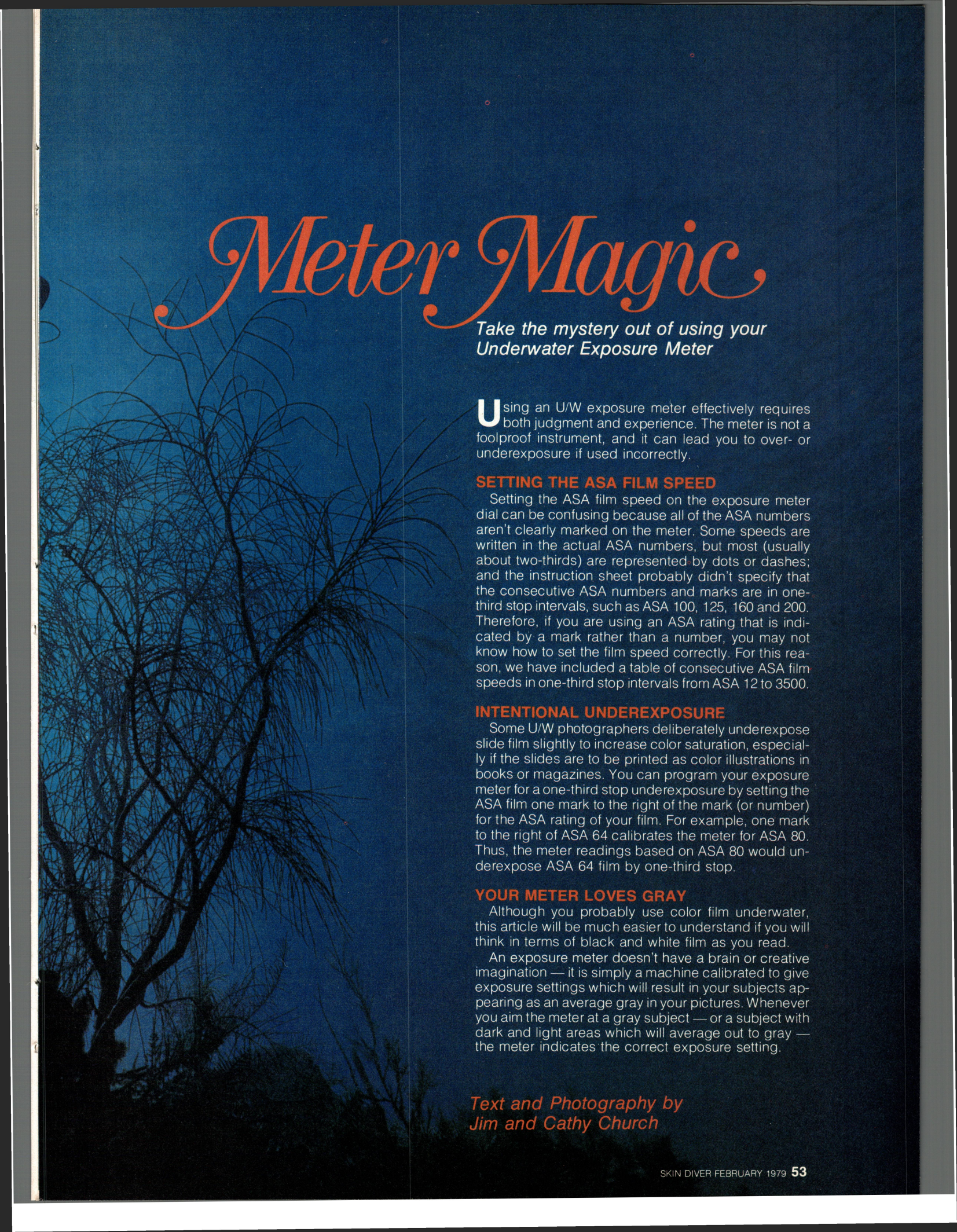
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Effective use of an exposure meter separates the professional photographer from the "Sunday shooter." It requires good judgment.





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Using an U/W exposure meter effectively requires both judgment and experience. The meter is not a foolproof instrument, and it can lead you to over- or underexposure if used incorrectly.

SETTING THE ASA FILM SPEED

Setting the ASA film speed on the exposure meter dial can be confusing because all of the ASA numbers aren't clearly marked on the meter. Some speeds are written in the actual ASA numbers, but most (usually about two-thirds) are represented by dots or dashes; and the instruction sheet probably didn't specify that the consecutive ASA numbers and marks are in one-third stop intervals, such as ASA 100, 125, 160 and 200. Therefore, if you are using an ASA rating that is indicated by a mark rather than a number, you may not know how to set the film speed correctly. For this reason, we have included a table of consecutive ASA film speeds in one-third stop intervals from ASA 12 to 3500.

INTENTIONAL UNDEREXPOSURE

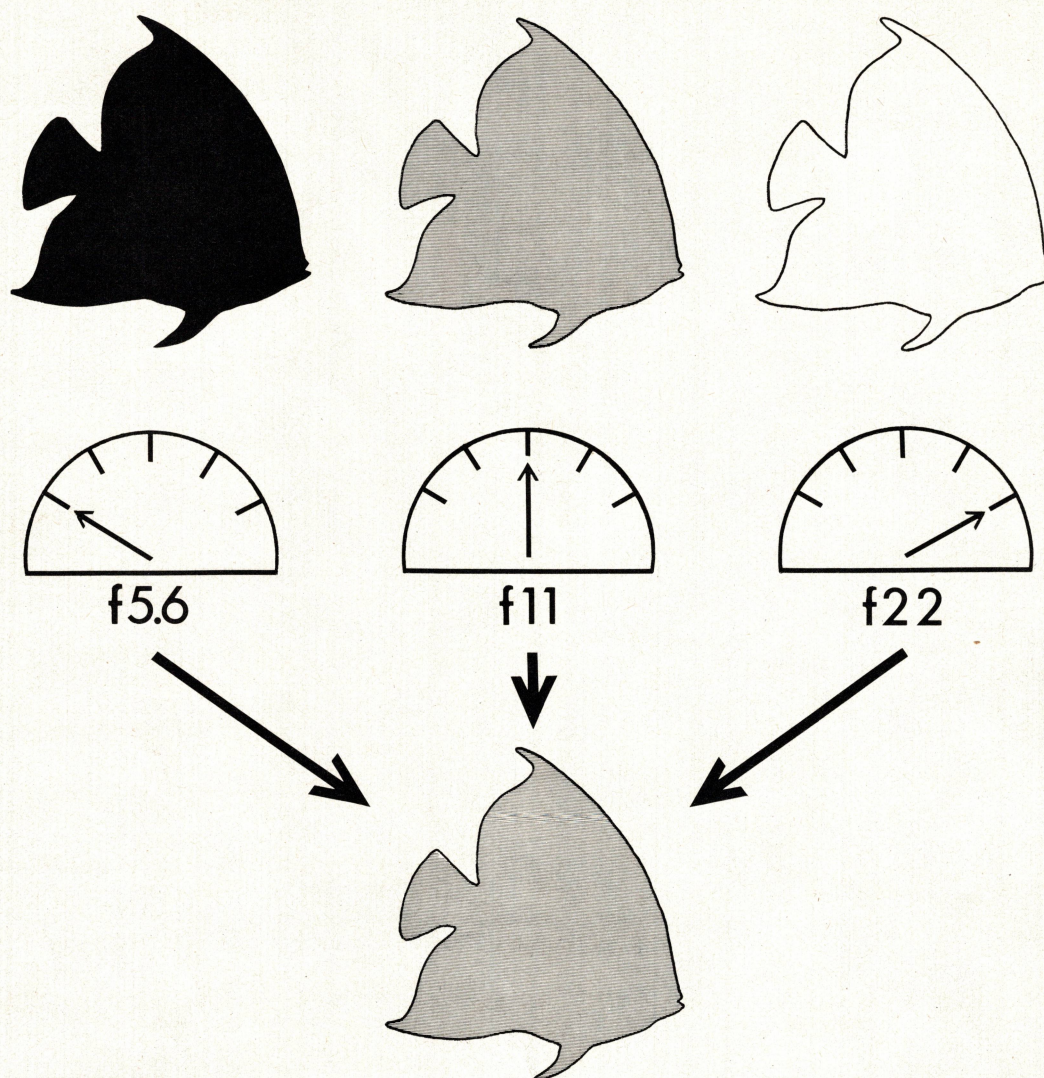
Some U/W photographers deliberately underexpose slide film slightly to increase color saturation, especially if the slides are to be printed as color illustrations in books or magazines. You can program your exposure meter for a one-third stop underexposure by setting the ASA film one mark to the right of the mark (or number) for the ASA rating of your film. For example, one mark to the right of ASA 64 calibrates the meter for ASA 80. Thus, the meter readings based on ASA 80 would underexpose ASA 64 film by one-third stop.

YOUR METER LOVES GRAY

Although you probably use color film underwater, this article will be much easier to understand if you will think in terms of black and white film as you read.

An exposure meter doesn't have a brain or creative imagination — it is simply a machine calibrated to give exposure settings which will result in your subjects appearing as an average gray in your pictures. Whenever you aim the meter at a gray subject — or a subject with dark and light areas which will average out to gray — the meter indicates the correct exposure setting.

*Text and Photography by
Jim and Cathy Church*



Exposure meters are calibrated to render all subjects as an average gray. If you want a white subject to remain white, you must open the aperture about two stops wider (lower-numbered stops) than the meter indicates for a proper exposure. If you want a black subject to remain black, close the aperture two stops.

But if you aim the meter at subjects which are white or black, the meter will respond as follows:

1. When aimed at a white subject, the meter will give an exposure setting which would render the white subject gray in your picture. Therefore, if you want the white subject to remain white, you must open the aperture approximately two stops wider (lower-numbered stops) than the meter indicates for a proper exposure.

2. And when aimed at a totally black subject, the meter will give an exposure setting which will render the black subject gray in the picture. Therefore, if you want the black subject to remain black in the picture, you must close the aperture approximately two stops (higher-numbered stops) more than the meter indicates.

Many topside photographers use an average gray subject area for the meter reading. Kodak supplies a special "18 percent gray card" for this purpose. The idea is to meter off the card so the whites will remain white, the grays will remain gray and the blacks will remain black in the picture. Gray cards are

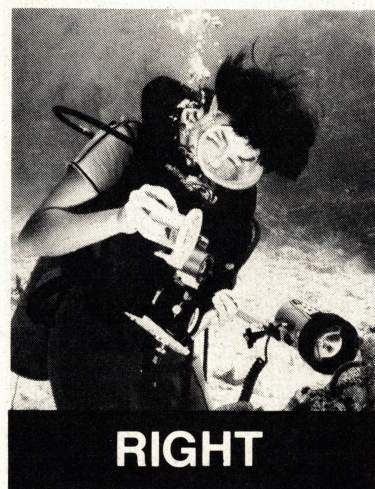
available at camera stores and are included in the Kodak pocket data guides.

TRY READING YOUR PALM

Although you probably won't take a gray card with you on photo dives, you have an acceptable substitute — the palm of your hand.

The palm of your hand reflects about 36 percent of the light striking it, which will be about double that reflected by the gray card. Therefore, you can take a meter reading off your palm, and open the aperture one additional stop to approximate a gray card reading. Hold your palm so the sunlight strikes it directly as it strikes your U/W subject. Don't cup your hand back toward the meter, or allow the meter to cast a shadow on it. Meter at four or five inches — an SLR behind-the-lens metering system will give accurate readings even though the lens is focused for a longer distance.

Note: Both your palm and the subject must be exposed to exactly the same lighting conditions, and we assume that you



Don't tilt the meter back as you adjust the dials or you may get a false reading. Meter off the midwater background between sun and wall.

When shooting a silhouette, tilt the exposure meter down slightly as you adjust the dials. This will prevent a false reading from the bright surface.



always open by one more stop than the meter indicates. Palm reading is often called "substitute metering" because you used it as a substitute in place of the actual subject.

METERING LIGHT SUBJECTS

Suppose that your subject is a light-skinned diver examining sea shells on a bright, sandy bottom. The water is clear and shallow, and sunlight illuminates the subject.

An exposure meter reading off the diver and bright sand would probably indicate a small aperture, such as f16. However — as the meter is calibrated to render all subjects as average gray — the f16 would probably underexpose your light subject. A palm reading — opened by one more stop — would indicate f11, the correct exposure for your light subject.

Compare the f11 palm reading to readings off the midwater background, grayish coral or rock, or other areas which would be gray in a black & white picture. You may find that these areas also read f11 (for this example) and can be used for substitute metering.

METERING DARK SUBJECTS

If the subject is darker than average gray, the meter will give an exposure that lightens the subject to gray. Thus, the tendency is to overexpose the lighter subject areas. For example, if you meter off a diver's black wetsuit, the picture will be about two stops overexposed. The details of the lightened wetsuit may look great in the picture, but the diver's bare hands, face and other lighter areas will be burned out.

However, if the subject is entirely black, such as a black sea urchin on a dark background, deliberate overexposure may enhance the picture by lightening the subject and accentuating details. If it's on white sand, try moving it to a darker area.

AVERAGING METER READINGS

Hand-held exposure meters usually have an acceptance angle of about 30 degrees. And if both light and dark subject areas are within this acceptance angle, the meter automatically averages the dark and light to gray. But if the light and dark areas are large, you can meter these areas and mentally average the readings. For example, if the light areas read f11, and the dark areas f5.6, set the aperture for f8.

If your camera has a built-in automatic exposure control, the behind-the-lens metering system automatically averages the light and dark areas. However, the meter system may be center weighted, bottom weighted or may respond evenly to light anywhere in the frame. Consult your SLR owner's manual to see the meter sensitivity pattern for your metering system.

METERING FOR HIGHLIGHTS

Some U/W scenes have a range of several stops from the darkest to the brightest areas. This happens frequently with wide-angle lenses which may include both dark bottom and bright surface in the same picture. In many cases, this wide range exceeds the latitude of your film.

With color slide film, the exposure should be for the brighter areas — letting the darker areas go dark. Meter on a middle tone of the brighter area — an area that would be average gray in a black and white print.

Assume that you have a diver silhouetted against the overhead sun, with a vertical wall leading up from the bottom. If you meter off the sun, it will reduced to gray and the other picture areas will be grossly underexposed. If you meter off the dark bottom or the wall, the diver and overhead sun will be grossly overexposed. But if you meter off the midwater background between the sun and the wall, you will probably get the desired exposure: The sun will be bright, the midwater background will be average gray, and the wall will be dark.

The same ideas apply when you photograph a diver silhouetted in the entrance of a cave or tunnel. If you meter from inside — and the dark walls are averaged into the meter reading — your diver will be overexposed. Meter the midwater background only — let the walls go dark.

METERING FOR FLASH EXPOSURES

If you are using a flash unit for fill or accent lighting with sunlight exposures, you must calculate exposures for both sunlight and the flash unit.

For lighting to restore color and fill the shadow areas, begin with a meter reading for a sunlight exposure. Assuming that the sunlight exposure is f11, for this example, look at your flash exposure table. See what flash-to-subject distance is required for an f8-11 exposure, and hold the flash at this distance. This will give you flash fill which is about one-half stop weaker than the basic sunlight exposure.

CHECKING METER ACCURACY

If you have had exposure problems, and suspect that your meter may be inaccurate, try this simple test:

(Continued on Page 74)



The Flower Gardens are tropical-type coral reefs, located in the Gulf of Mexico, 105 nautical miles offshore from Freeport, Texas, and 110 nautical miles south-southeast of Galveston. Their existence has been known by geologists and fishermen for many years. They were, until around 1960, however, thought to be dead, relics of geologic ages past when warmer waters prevailed in the area.

The northernmost living coral reefs in the Caribbean/Gulf of Mexico system, the Flower Gardens actually consist of two banks of coral, 12 miles apart. Both grow on top of uplifts from the floor of the Gulf of Mexico and are known as the East and West Flower Gardens. The East Garden comes to within some 54, and the West 60, feet of the surface. The West Garden has a steeper drop-off and is closer to the edge of the continental shelf. It seems to have more live coral.

The reefs grow on top of salt domes which arose out of the Louan salt layer, which extends under the Gulf of Mexico from Texas through Louisiana, Mississippi, Alabama, and into Western Florida. There had to have been a large sea in this area, during approximately the Jurassic Age, to lay down this vast quantity of salt. Afterwards, uplifting occurred continuously, even to the present time, both on shore and offshore.

The readily visible onshore salt domes are High Island, Texas, and Avery Island, Jefferson Island, Weeks Island, Cote Blanche Island and Belle Isle in Louisiana. All six produce oil and the five in Louisiana contain operating rock

Flower Gardens

By Taylor Caffery

Living
Coral Reefs
in the
Gulf of
Mexico
off Texas

Photography by
Jim Fuller

salt mines. In other places, such as these Flower Gardens, the domes do not come as close to the surface. If you were permitted to visit the salt mines of Avery, Jefferson, Weeks, Cote Blanche or Belle Isle, you would find contoured lines showing how the salt has flowed upward in uneven patterns, and could see how these domes were formed.

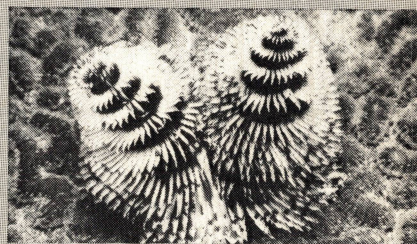
To Gulf Coast scuba divers, the prime interest of these subsea uplifts is the coral reefs growing on top of them, which offer the only and closest access to a coral experience they can find along the coastline from Brownsville, Texas, to the lower portion of Florida. Both the East and West Flower Gardens should, perhaps, be considered marginal reefs. They exist in water temperatures which are marginal for the growth of coral. The reefs seem similar to some in the Bermuda area where the water is too cold for the growth, for example, of staghorn and elkhorn coral and a calcified marine

green alga. The Flower Gardens are, nevertheless, reasonably lush and do have large sponges, spiny oysters, brain coral, fire coral, *Montastraea*, *Mussa*, finger coral and flower coral (*Poritidae*). A number of the usual Caribbean type reef fish are also present.

The Marine Biomedical Institute of the University of Texas at Galveston has been doing research on these reefs for a number of years, operating since 1971 through the Flower Garden Ocean Research Center (FGORC), with headquarters in Galveston. Some research and estimates figure that 85 percent of the U.S. population could, by 1995, be concentrated within a 50 mile strip bordering our Gulf, Atlantic and Pacific coasts, making it highly advisable to now start carefully investigating our continental shelves. FGORC contemplates such investigation through biological, ecological, geological, environmental, biomedical and engineering re-

the rising salt, now stand up several feet, in places, over the present bottom. Because of additional erosion, they are bent inward toward the top of the former dome. Were it not for several breaks which have occurred, a diver could follow one layer of rock all around Stetson Bank and come back to the point from which he or she started.

It takes a fair sized vessel to make the Flower Gardens trip. This alone restricts



Beautifully delicate polychaetes, such as these Christmas tree worms, adorn the coral gardens.

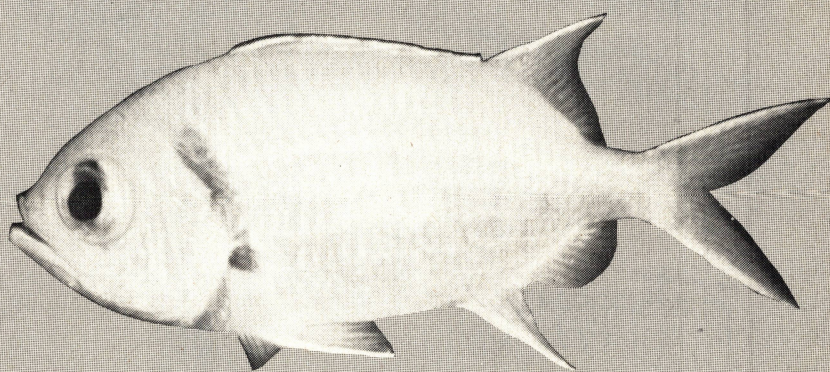
search. In the meantime, FGORC and ecologists in general would appreciate it if divers would consider diving on these reefs a privilege. They could be destroyed if too many divers decided to take home too many samples, specimens and pieces.

While on the Flower Gardens we participated in the salvaging of three anchors, all old but not ancient. They were brought to the surface with air lift bags, and from there winched aboard.

The moon was clear for our night dive, though not high in its orbit. When the underwater flashlights were switched off we could still see the large coral outlines reasonably well.

A Flower Garden dive trip ordinarily consists of leaving Freeport on Friday evening at about 7 p.m., sleeping while the boat cruises, waking Saturday morning at the Flower Gardens and diving there all day. A night dive is generally made Saturday night, and if only the Flower Garden is to be visited, plus perhaps Stetson Bank, you stay in that vicinity until about one o'clock Sunday. Then you leave for Freeport and arrive there about 9 or 10 o'clock Sunday.

Stetson Bank is another salt dome uplift inshore from the general vicinity of the Flower Gardens. No coral grows on it, but there are perhaps more fish here than at the Flower Gardens. The geologic interest in this particular bank is that it was uplifted and then later eroded, so that the dome no longer is rounded, but has a flat top. The result is that the rocks which originally constituted flat beds over the salt, and which were pushed up into a circular dome by



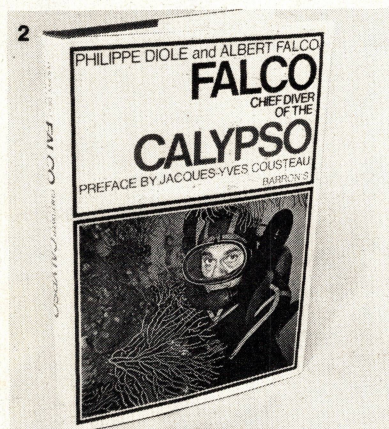
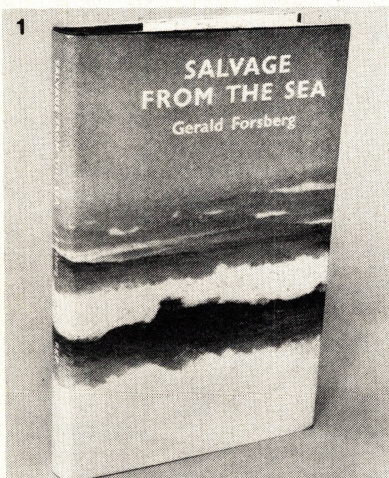
The northernmost living coral reefs in the Caribbean/Gulf of Mexico system, the Flower Gardens support a wide variety of colorful marine life and are a favorite spot among Gulf Coast divers. Students from the University of Texas (shown at work below) have been doing research here for years.



the number of divers who will have the opportunity to visit them. FGORC uses the *Miss Freeport*, a 135 foot research ship, which can accommodate 24 students, divers and scientists. The only charter dive boat operator I know of who makes regular trips to the gardens is Captain A. E. Blood. He can be contacted at (713) 983-1843. His 65 foot *Silver King II* has a compressor, galley and bunks. He

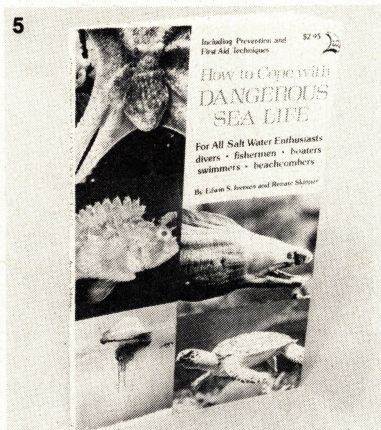
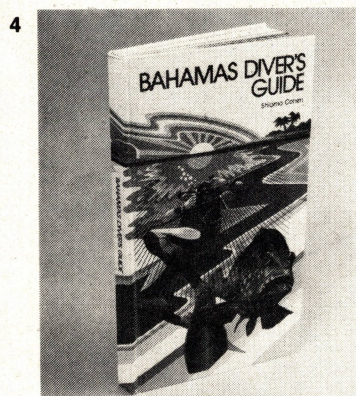
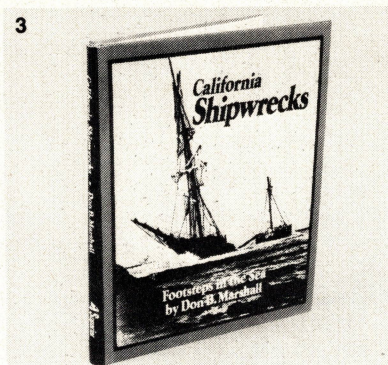
has been running charters for two years. Wetsuits are not a necessity, but are certainly comfortable. The food is excellent. Have a good trip! But do not be one of those divers, seen all too often, who kills, cuts or harms marine life, corals or growth. Since humans have acquired dominion or, more actually, trusteeship over the other life and things of this world, we must not pillage nature. »

New Books



1 Salvage from the Sea — A detailed and lively text on nearly every aspect of marine salvage, including harbor clearance, submarine recovery, and aircraft salvage. It also has an extensive bibliography. 179 pages. Illustrated with B/W photographs. \$12.25. Routledge & Kegan Paul, 9 Park St., Boston, MA 02108.

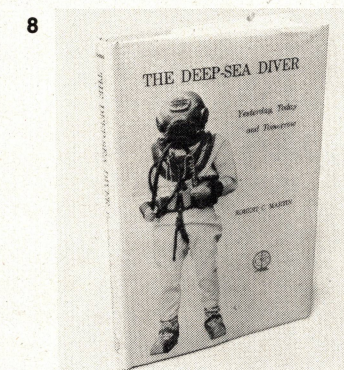
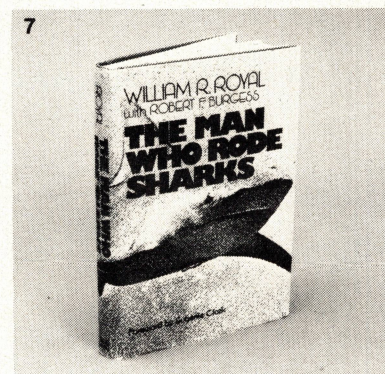
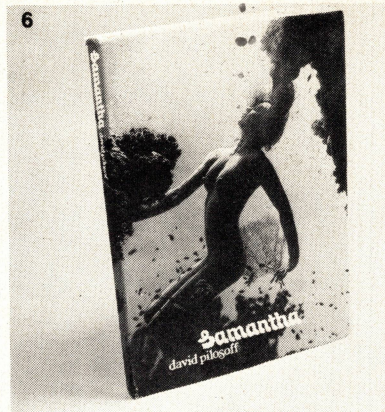
2 Falco, Chief Diver of the Calypso — A fascinating account of the life of Albert Falco, Captain Jacques-Yves Cousteau's chief diver. His extraordinary experiences are recounted in detail and illustrated with 131 color photographs. \$12.95. Barron's Educational Series, 113 Crossways Park Drive, Woodbury, New York 11797.



3 California Shipwrecks — A pictorial chronical of shipwrecks of the California coast from 1579 through modern times. Illustrated with original B/W photographs and a colorful description of each wreck. By Don B. Marshall, 175 pages. \$14.95. From Superior Publishing Co., 708 Sixth Avenue No., Seattle, Washington 98111.

4 Bahamas Diver's Guide — An essential companion for divers traveling to Bahamian waters. It contains exquisite color photographs, detailed navigational charts, fish index, and medical tips. Text is written in a flowing, conversational style. \$15.95. From Seapen Books, 9200 Sunset Boulevard, Los Angeles, CA 90069.

5 How to Cope With Dangerous Sea Life — A valuable guide to potentially dangerous marine organisms from the warm waters of the South Atlantic, Gulf of Mexico, Caribbean, Bahamas, West Indies, and Mexico. Full color photos identify each creature. \$2.95. Windward Publishing, Incorporated, Miami, FL 33137.



6 Samantha — An exciting look at the incredible flora and fauna of the Red Sea as seen by nude model Samantha Bond. Artistically photographed by award-winning filmmaker, David Pilosoff. 148 pages, 9 1/2" by 13 1/2". Hardcover. \$25 plus \$2.50 postage/handling. Samantha Book Club, 18 West 38th St., New York, NY 10018.

7 The Man Who Rode Sharks — A lively and exciting story about William R. Royal, a pioneer in U/W exploration, shark-catcher for Florida's Cape Haze Marine Laboratory, and a respected authority on shark behavior. Foreword by Eugene Clark. \$8.95. Dodd, Mead & Co., 79 Madison Avenue, New York, NY 10016.

8 The Deep Sea Diver: Yesterday, Today and Tomorrow — A comprehensive work explaining the origin, development and future of commercial diving. It describes in detail how each type of equipment is used. 213 pages, with numerous B/W photos. \$10. From Cornell Maritime Press, Box 109, Cambridge, MD 21613.

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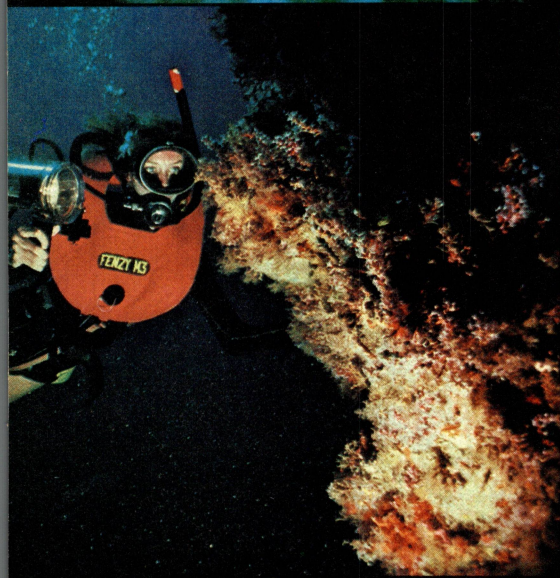
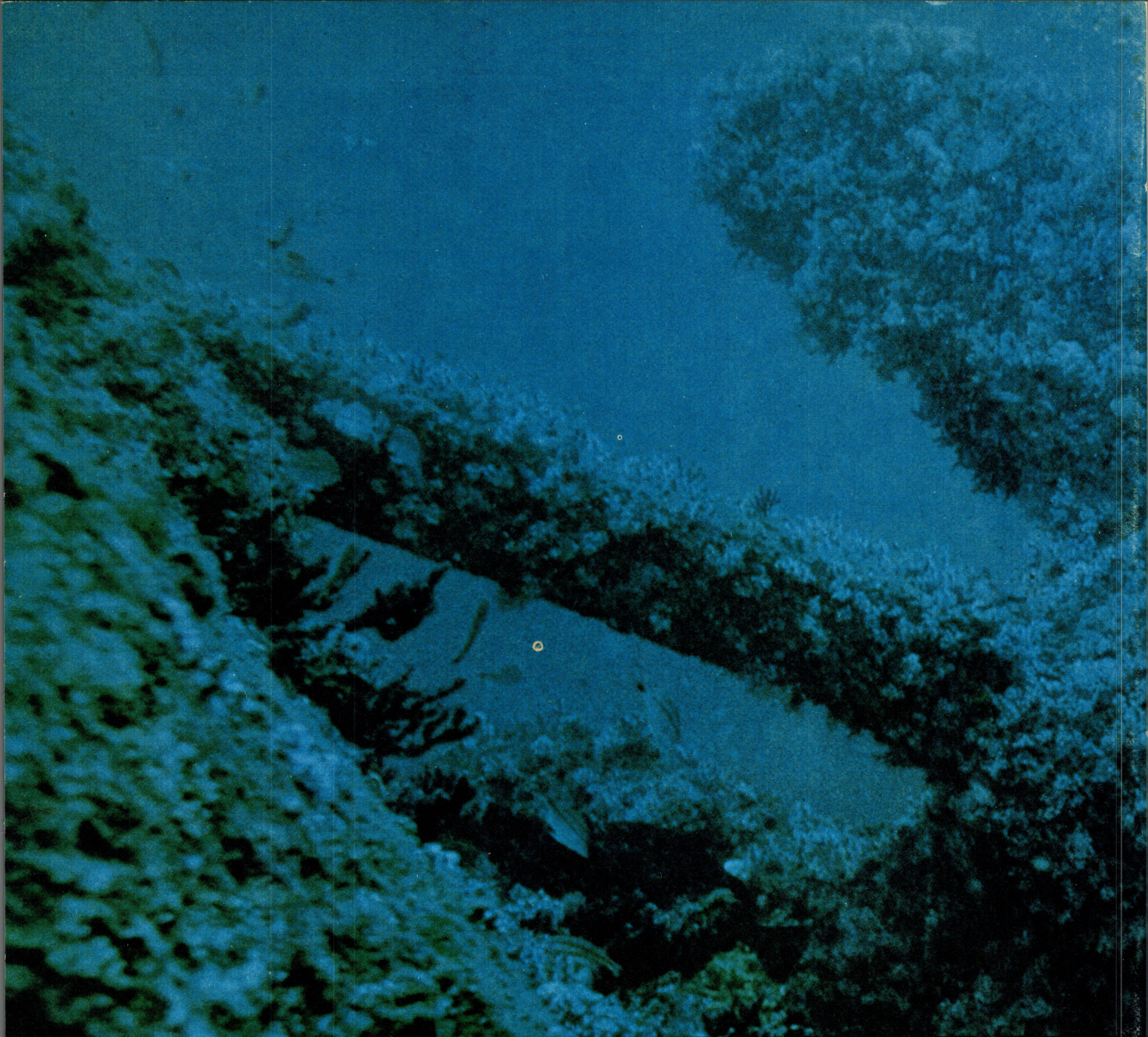
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A CAROLINA CLASSIC



Text and Photography by Bill Lovin

Few sights in the majestic underwater world are as compelling to the diver as a classic shipwreck. Whether it is the scattered bones of a Spanish treasure ship or the great steel hulk of a modern ocean liner, each holds a promise of mystery and adventure.

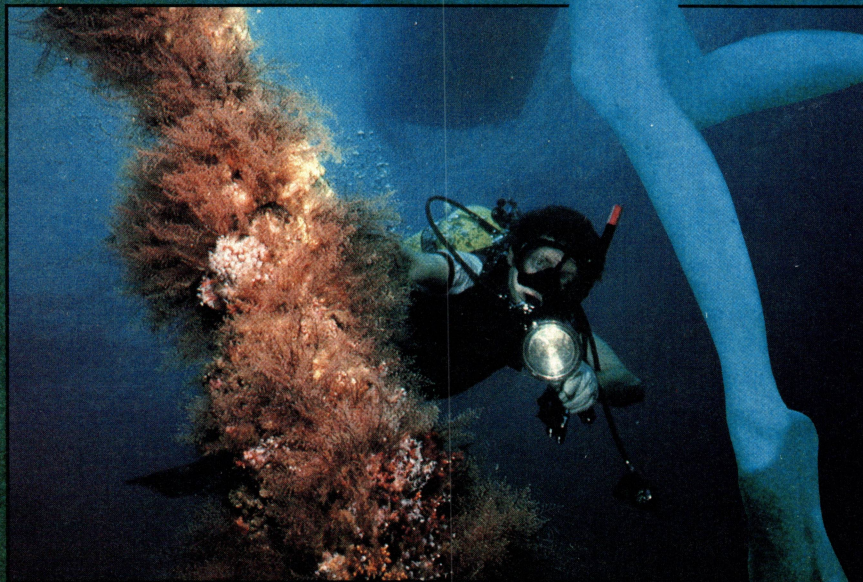
But the truly classic shipwreck proves an elusive quest for many divers. Only a few spots in the world provide all of the ingredients required: clear water; abundant and interesting marine life; and a large, nearly intact, wreck.

One area where shipwrecks abound is the coast of North Carolina. Storms, vast shoal areas and three violent wars have earned it the name, "Graveyard of the Atlantic." Literally thousands of ships and sailors have been lost here. Countless wrecks from the days of sail are now only wooden bones buried in the sand. But many others were great iron ships sunk during wars or modern storms and their hulls remain to be explored by the adventurous diver. One of the most exciting of these is a World War II tanker called the *John D. Gill*.

In 1942 the *John D. Gill* was one of many large T-2 tankers moving petroleum products vital to the war effort up and down the East Coast of the United States. On March 13, the massive tanker was 27 miles off the southern coast of North Carolina. Her 500 foot profile was clearly silhouetted in the lights of the port city of Wilmington. Unfortunately for the crew of the *Gill*, her silhouette was not only visible to some far flying seagulls but also to Kaluen Erich Rostin of the German submarine U-158.

At 0505 hours on the morning of March 13 a single torpedo from the U-158 smashed the 12,000 ton tanker amidships. The fully loaded vessel immediately caught fire. Fire hoses snaked across the decks as the crew fought to contain the blaze, but the situation was hopeless. The ship had begun to break in two.

Casualty reports are unclear but an aging charter boat captain who participated in the rescue recalled that the intensity of the heat from the burning ship kept



rescue vessels far back. The flames melted brass fittings and portholes into puddles on the deck of the *Gill*.

As quickly as the torpedo had struck, the *John D. Gill* broke in half and slipped beneath the waves. Her bow section, half the length of the ship, settled gently to the bottom keel first. This section sits upright in 90 to 100 feet of water, with the expansive deck forming a false sea floor at 50 feet. The stern section broke into smaller pieces and forms a jagged trail of wreckage outward from the bow.

For 35 years the warm waters of the Gulf Stream bathed the wreckage of the *Gill*, painting it with vivid colors and nurturing countless forms of marine life. And when divers began to visit the wreck in earnest during the early 70's, they discovered that the *John D. Gill* could certainly be called a classic shipwreck.

Two years ago, together with a team of divers led by Ron Thrower of Sea Wolfe Diving Center in Raleigh, I began a three month study of the wreck and the marine life found on it. The project would result in a 20 minute, 16mm film about the delicate balance of nature found here.

Our filming began in July, on a day when optimal wind and current conditions brought incredible visibility to the wreck. Hanging just below the surface we could easily see the 60 feet down to the deck. It stretched out in the blue haze like a football field littered with war surplus equipment. I could see Lynn Smith, my dive partner, already swimming along the deck toward the bow — our goal for this dive. Lynn was a graduate student from the University of North Carolina and her observations of the wreck would eventually comprise most of the film's narrative.

I settled to the deck beside a heavily encrusted lifeboat davit. From 60 feet down I could clearly see our dive boat, the *Whipsaw*, tugging at her anchor line. Captain Ed Wolfe was leaning over the side, observing me from the surface. I squeezed off a few feet of film for posterity and swam away to join Lynn.

Little of the superstructure of the wreck remains. It was blasted off by the Navy years ago because it reached too far toward the surface, constituting a navigational hazard. Today there is only a series of roofless walls and bulkheads. I swam past the remains of the captain's cabin, the galley and a head (easily identified by its porcelain fixtures).

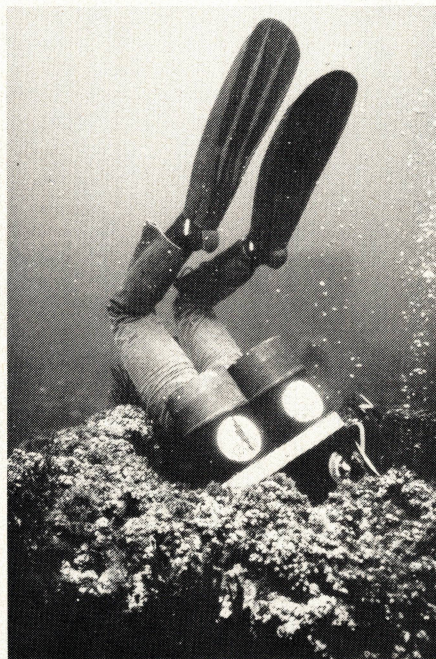
The deck was thickly covered with corals, anemones and clusters of flat sponges. My movie lights revealed a macro-world of startling colors passing under me. Along the bulkheads sprouted branches of red soft corals; brightly colored tropicals hid in the crevices.

Lynn waited for me near the prow of the ship. Here the deck was cluttered with

winches, chain, and a spare anchor — all encrusted into soft sculptures. The current seemed stronger here, and thick schools of grunts huddled in the protection of the flared gunwhales.

With a kick, Lynn glided outward from the bow into the nether world, far from the sand — far from the surface. From her vantage point in space the whole magnificence of the prow was visible. Two huge anchors still hung from their chain wells in the bow. Their size was a reminder of the awesome dimensions of the wreck we were diving on, a wreck that in spite of the good visibility could be seen only in very small parts. Although the bow is constantly swept by strong currents, the anchors — like all of the wreck — were covered with a luxurious coat of marine life.

As we floated out from the wreck it seemed as if we had crossed an interface between its protection and the open



ocean. Suddenly we were surrounded by a school of large, silver amberjack. Five-foot barracudas hung motionless in the blue mist while in the distance dark shadows moved across the sand. Now and then, one of these predators dive bombed the wreck to pick off a small fish unlucky enough to be caught in the open.

Over the weeks we filmed many such incidents of eat and be eaten. An aerial dogfight was underway almost constantly in the water over the wreck as amberjack and barracuda sparred with schools of tiny baitfish. Schools of sailors choice could be found grazing on the coral encrustation with the methodical slowness of a herd of cows. All of this pointed to the fact that the wreck is a great life support system, attracting small creatures first,

then larger and larger fish. What was once a rusting hull is now a lush and beautiful undersea oasis.

Part of our purpose in studying the wreck was to determine what effects the presence of humans has had and will have on the marine community. Salvage divers had visited the wreck in the early 70's and heavily dynamited the bow to retrieve several spare brass propeller blades stored there. Today the bow is sagging from a large hole blown in the port side and it is only a matter of time before the prow will break off.

Scientists tell us that the marine life will suffer little if the wreck begins to fall apart, but for divers the destruction of the majestic prow is sad indeed.

During the summer months many divers visit the wreck but virtually all of them dive on the bow section. The stern is deeper and little more than piles of wreckage tangled by fire and explosion; it holds scant fascination for most divers. But on the stern, the marine life is much more abundant. Schools of Atlantic spadefish (which are very timid) swam close to us. We never saw these fish on the bow section of the wreck. On the stern we filmed schools of grunts much larger than those on the bow section and we could swim within an arm's length of huge groupers.

Hidden amidst the jagged wreckage was a grim reminder of this shipwreck's past. Beneath an upturned platform, resting against the ship's fantail, hung a five-inch gun. Beside the gun, heavily encrusted to the wreckage, was one of the explosive five-inch rounds. Both the gun and the only remaining round were decorated with coral and sponges.

Our dives on the stern came at the end of our filming schedule and remain among my most memorable excursions on this classic shipwreck. Here we were able to film the startling contrast between two marine environments: one regularly visited by divers and the other (only 100 yards distant) which was not. And on the stern we were reminded, forcefully, that this incredible undersea oasis was the result of a dark chapter in history.

Like most underwater photographers, I've relived the excitement of these dives many times, each time more in awe of the beauty and delicate balance of the marine world. And as I screen our finished film for audiences, particularly on dreary winter days, I am more determined than ever to return for one more dive on the classic shipwreck, the *John D. Gill*.

Information on North Carolina diving and a list of area dive shops may be obtained by sending a stamped, self-addressed envelope to Marine Grafics, Box 2242, Chapel Hill, NC 27514. The 16mm film *Wreck in the Graveyard of the Atlantic* is distributed by Marine Grafics. 

New Gear



1 One-Piece Undergarment — Provides head-to-toe warmth when worn in conjunction with the Poseidon Unisuit dry-suit. It features lightweight nylon pile, attached boot/socks, ribbed wrist cuffs and a convenient double zipper system. \$157. From Poseidon Systems. Available at your local Parkway/Poseidon dealer.

2 Prismatic Mask — Provides wide vision without extra weight and low volume without the tunnel effect. The innovative mask-lok fastener enables the diver to make adjustments with one hand. Available in orange and blue. \$34.95. From Farallon/Oceanic, 1333 Old County Road, Belmont, California 94002.

3

CALIFORNIA ABALONE

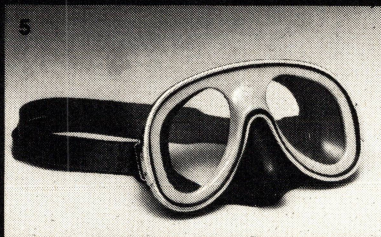
RED
(Hyalite ruberum)
NO STOP 2 MINUTES
10 METERS 2 MINUTES

PINK
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WHITE
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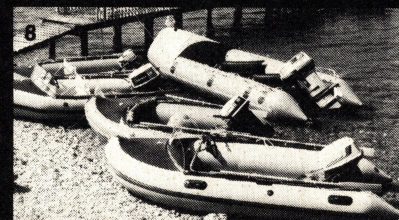
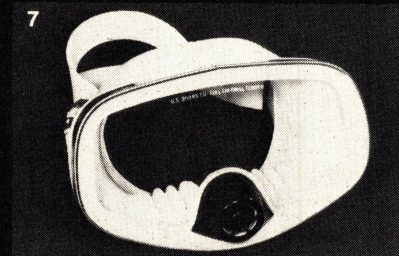
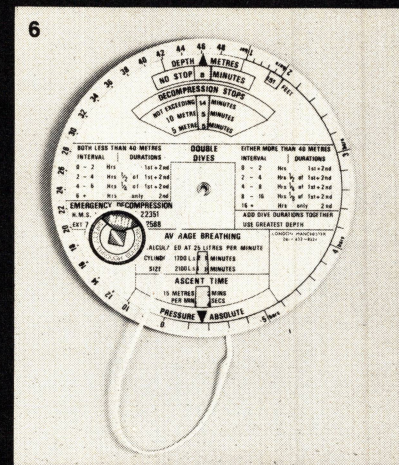
GREEN
(Hyalite ruberum)
NO STOP 2 MINUTES
10 METERS 2 MINUTES



3 Abalone Guide — A handy laminated chart giving the major characteristics of the most common species of California abalone. With accurate and concise information, it will help you learn to distinguish between the various species. \$2.95. From Oceans Image, 6057 Coldbrook Ave., Lakewood, California 90713.

4 Wrap-Around BC — Has separate front and back bladders, each with its own inflation/deflation systems. Each compartment provides 25 pounds of lift, for a combined total of 50 pounds. The system features a large zippered pocket with sewn in key ring and signal whistle. \$189. From Dacor. At your Dacor dealer.

5 Close-Up Mask — A streamlined, low volume mask with large lenses set close to the diver's eyes. It provides maximum vision with the least amount of displacement. Roomy nose pocket and a double seal give a comfortable fit. It's durable with a stylish blue trim. \$26. From Scubapro. At your dive shop.

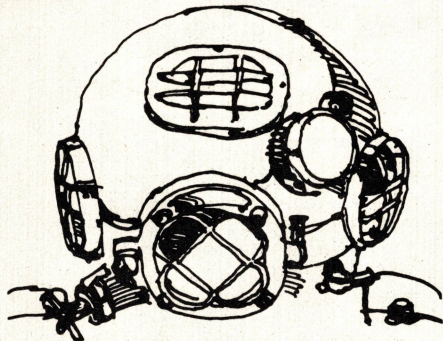


6 Metric Dive Planning Calculator — Designed for use before and during the dive. Simply set the calculator at the intended depth and it converts meters to feet, gives your no-stop time, decompression stops, air requirement and ascent time. \$6. From NAUI Canada, P.O. Box 510, Etobicoke, Ontario M9C 4V5.

7 Silicone Mask — The hypo-allergenic Pacifica II provides a longer lasting, translucent, non-deteriorating skirt with a tempered glass lens, a built-in purge valve and a stainless steel rim. The fully adjustable strap provides all-around diver comfort. \$28.95. From U.S. Divers. Available at your local dive shop.

8 Inflatable Boats — Imported from Italy by Proko International, there is a model and a size for every purpose. Each is constructed of durable DuPont hypalon and is available in orange/red, yellow, or marine gray. \$995 to \$3000. From Proko International, 12511 Beatrice Street, Los Angeles, California 90066.

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432-0151 ex. 570).

TREASURE HUNT

A team of treasure hunters, led by Burt D. Webber, president of Seaquest International, set sail recently aboard a 112 foot converted British minesweeper for the Dominican Republic. The expedition's objective is to locate and salvage the wreck of the *Nuestra Senora de la Concepcion*, a fabled Spanish galleon that sank on a treacherous reef 338 years ago, taking with her a vast treasure worth perhaps \$189 million.

"The problem," said Webber, "is that the ship, or what's left of it, is locked beneath 8 to 12 feet of solid coral in a previously uncharted reef formation."

Working with specially prepared aerial survey maps, Webber will use documents and charts derived in part from the records of William Phips, a colonial treasure hunter who in 1687 found and partially salvaged the *Concepcion* 41 years after its sinking. Webber's expedition has been named Operation Phips II in memory of the event.

Webber also stated that Seaquest International has an exclusive search contract with the Dominican Republic which claims sovereignty over the reef area, called Silver Bank.

U/W SCHOLARSHIP

A non-profit Illinois society — Our World-Underwater — is offering a \$5,000 scholarship to persons seeking careers in underwater or water-related fields.

The scholarship's primary aim is to expose the recipient to all aspects of professions involving the U/W world during the scholarship year. The experiences are not limited to academic pursuits but encompass areas of exploration, publishing, photo-journalism, the National Oceanographic and Atmospheric Agency (NOAA), Sea Grant, and equipment manufacturing.

The purpose of the scholarship is to make the recipient aware, by experience, of all the career paths available today inside and outside the U.S.

For information, contact: Harry Shanks, Our World-Underwater Scholarship Society, P.O. Box 4428, Chicago, Illinois 60680.

MARINE HOT LINE

The Marine Mammal Stranding Center, a project of the National Marine Fisheries Service, Cape May, New Jersey, has asked divers to report all strandings of whales, dolphins, seals and sea turtles by calling (609) 348-5018.

The center is the first 24 hour operation of its kind in the United States with a paid professional staff. Its primary purpose is to give first aid and assistance to whales, dolphins, seals and sea turtles that are injured or have beached themselves. Funding for the center comes from private donations.

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____ Forearm
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____ Biceps
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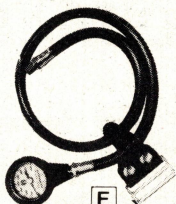
C Full Vision Low vol. mask. \$19.95



D U.S. Div. Rocket fins. \$15.95



B All metal dive light. \$54.95



E U.S. Div. press. gauge. \$34.95

MR12 Regulator. \$109.95



Parkway 1/4 suit Farmer pants/jacket/hood. \$141.95

80 cu. ft. alum. tank. J-\$116.95 K-\$109.95

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Use and operation of life support equipment should not be undertaken without qualified and proper instruction in their use. This ad does not imply the sale of life support equipment through the mail.

BLUE WATER STYLES

An exciting French cut suit has been designed for female divers by Blue Water Wetsuits of Santa Monica, California. The wetsuit lines are complimentary to the female figure, and its weight and comfort make it a natural for warm water diving.

Blue Water Wetsuits has been in business for two years. Company president, Geoffrey A. Stern, was formerly with White Stag Watersports.

PADI ITC

PADI Northwest is offering its ninth annual Instructor Training Course in Seattle, Washington, on February 10-11 and March 17-22. Both sessions must be attended in order to complete the 80 hour instructor certification program.

The emphasis, this year, is on PADI's New Scuba Course. Teaching methods and the recently developed audio visual program will be available for preview. Current instructors are welcome to attend any session.

Reserve space now; only 30 applicants will be selected. Mail your name, address, telephone and a \$50 deposit to: Course Director, Joan McGilton, The Seattle Aquarium, Pier 59 Waterfront Park, Seattle, Washington 98101.

DECOMPRESSION SEMINAR

The Decompression Tables seminar to be held March 10, 1979, in Santa Ana, California, will educate participants in the correct procedures for application of the U.S. Navy dive tables. It will deal with subjects such as: derivation of the tables, decompression physiology, common dive table misconceptions, altitude diving procedures, latest table discoveries and theories, multi-level dive table procedures, and decompression meter use. A social will be included.

The seminar will be held at Santa Ana College from 9:00 am until 4:00 pm. Dr. Bruce Bassett of Brooks Air Force Base; Dr. Charles Brown, SKIN DIVER Magazine medical editor; Dr. Richard Bell from U.C. Davis; C. L. Smith, author of *Altitude Procedures*, and other notable authorities will present the latest information on this important subject.

For information, write: PADI Headquarters, 2064 N. Bush St., Santa Ana, CA 92706.

MAN IN THE SEA

Bill High, founder and director of the popular Man in the Sea Symposium for the last 10 years, has announced he is turning the event over to new leadership. An executive committee has been appointed. The new symposium director, Stan McNutt, is the city manager of the

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city of Des Moines, Washington. Deputy director Walt Amidon, is manager of Underwater Sports, Inc. of Federal Way. Business manager George Axtell is the North Pacific Branch Manager of NAUI. Bill will serve as consultant, but is withdrawing from active production of the symposium.

All monies earned by the symposium have been, and will continue to be, used to further the general safety and education interests of North Pacific divers.

The new committee is now planning programs for the 1979 event, March 18th and 19th at Pacific Science Center. For information, contact: Stan McNutt, Director, 1979 Man in the Sea Symposium, 22933-21st Avenue South, Des Moines, Washington 98188. >

SCHOLARSHIP WINNER

Alan Olsen of 28 Leadfield Drive, Reno, Nevada, has won the Deborah Brennan Memorial Scholarship and will attend the deep sea diving course at the Los Angeles Harbor-based Commercial Diving Center. The scholarship is awarded annually by the school as a memorial award to its first woman graduate, Deborah Brennan, who died recently.

The award was presented to Olsen at NAUI's IQ-10 at the Disneyland Hotel on Sunday, November 12, 1978.

The Commercial Diving Center trains deep sea divers for the international offshore oilfield dive industry. The mounting boom in commercial oilfield diving is being spurred by the worldwide petroleum shortage which has caused major oil and natural gas firms to drill for hydrocarbon products in the ocean floor. >

JETSUIT

Parkway Fabricators of New Jersey has produced an inflatable drysuit with form-fitting contours. Called the JetSuit, it offers manual or automatic introduction of air into the suit, optional boots and gloves, and a patented neck seal.

In addition, the new drysuit has been modified to provide a closer "body-shaped" contour. New black accent panels improve styling, while a new one-piece pile undergarment with attached sox provides increased ease of dressing, warmth and convenience.

After 23 years as a leading manufacturer of wetsuits, and having made the Unisuit the most successful drysuit in America, Parkway and Poseidon are embarking on a major expansion program for 1979.

For information, contact Parkway/Poseidon, 241 Raritan Street, South Amboy, New Jersey 08879. Or see your local Parkway/Poseidon dealer. >

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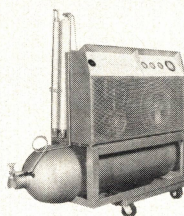
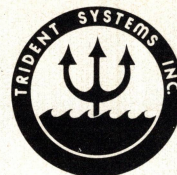
skin diver

March Fish of the Month

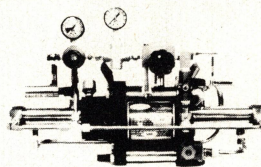
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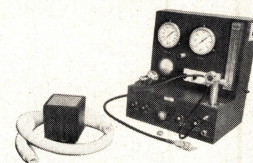
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Vince Patheson. Telephone: 884-9901



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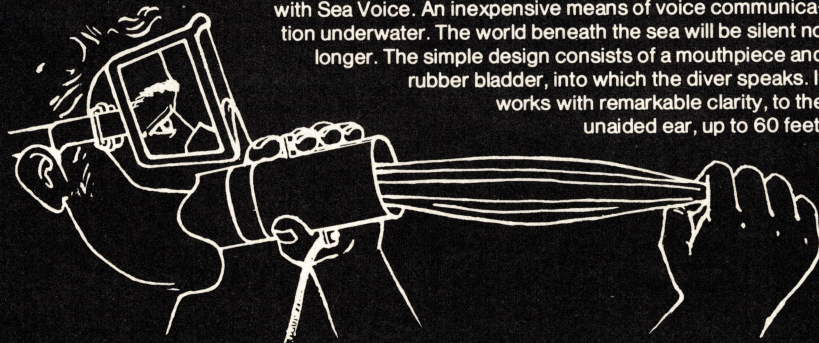
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DIVE N' SURF GOES SOLAR

One of the nation's oldest dive stores, Dive n' Surf, Redondo Beach, California, has become the first to switch to solar heating. Owned by Bob and Bill Meistrell, Dive n' Surf began business in 1953. That makes it among the first stores in the nation to specialize in dive equipment. Dive n' Surf was also the first store to: offer commercially available certified dive classes; create an "air card" concept; and, own its own charter boat, the *Westerly*.

Recently, Robbie Meistrell became the second generation of the family to assume management of Dive n' Surf and has begun his own campaign of firsts with the addition of 16 solar heating panels for the indoor pool. "The energy savings has been almost 100 percent," Robbie said recently. "In the first six months of operation it has kept our pool at an almost constant 93°F. I expect the units to pay for themselves within three years."

The solar heating units are part of an overall expansion and modernization program at Dive n' Surf. The dive shop display area has been doubled to 3000 square feet and a completely new air system has been installed, featuring 26 air stations pumping from 1800 to 4500 psi. Separate buildings house a 750 square foot scuba repair facility — with a chamber for checking gauge calibration and a flow meter — as well as a two story building for boating motors and accessories. Dive n' Surf also has the largest selection of water skis in California, sells Boston Whalers, Johnson outboard motors, and is the home of Body Glove dive and surf suits. Dive n' Surf is located at 504 N. Broadway, Redondo Beach, California 90277.

DIVERS FIND SILVER

A group of diver/treasure hunters from the Washington D.C. area recently struck pay dirt. Mike Hillier, Darren McGehee and 19 others recovered seven ornate silver chandeliers from the wreck of the four masted steamer *Oregon* which sank off New York in 1886.

The group had chartered the 68 foot dive boat *Black Coral* for the weekend expedition. Robert Shourot, owner of the vessel and of Underseas Systems, described the chandeliers as "absolutely beautiful... I couldn't imagine how much they're worth."

McGehee said some of the treasure will be refinished and will decorate Hillier's Divers World dive shop in Silver Springs, Md. Since the *Oregon* lies in international waters, the divers expect no problem with ownership.

Discover the underwater world
CLOSE UP in the March
skindiver



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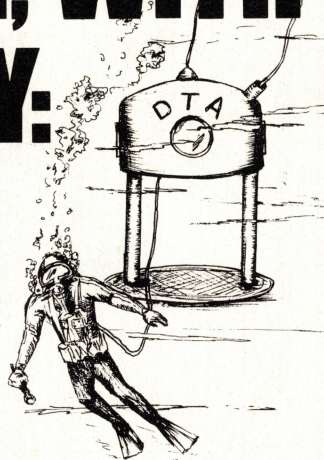
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MEDICAL TAPES

Dr. Christopher W. Dueker has just released a tape set on the medical aspects of sport diving called the Diving Safety Digest I and II. This two tape series presents an introduction to topics of concern to all thoughtful divers.

The tapes discuss diver selection, diving and drugs, water safety training, drowning, barotrauma (descent and ascent), nitrogen narcosis, decompression sickness, the breathing mix, unconsciousness, rescue and first aid.

To purchase the tapes send \$6 for Part I or \$11 for Parts I and II. California residents add 6% sales tax. Send all orders to Diving Safety Digest, P.O. Box 2735, Menlo Park, CA 94025.

U.S. NAVY MANUAL

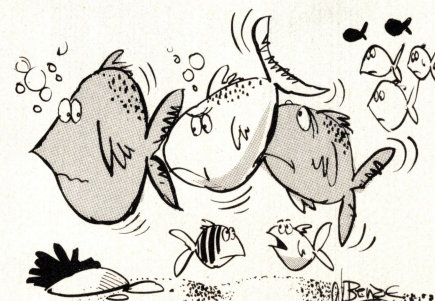
There is a new edition of the U.S. Navy Diving Manual, one which constitutes the most comprehensive revision of the manual since its inception in 1916. It has been completely rewritten, the format has been changed, the volumes have been tab-indexed, and more photos, illustrations and charts have been incorporated. Both volumes are looseleaf and punched for a five ring binder. The new smaller size (8½ x 10) makes it more convenient to carry and read.

The U.S. Navy Diving Manual and binder can be purchased through Best Bookbinders, 23005½ S. Avalon, Carson, CA 90745. The manual is \$24.50; the binder is \$5.50. Include \$3.50 for postage and handling.

COMPRESSED AIR ARTICLE

A ten page article written in laymen's language analyzes problems involved in providing pure compressed respiratory air and offers effective, safe, yet economical solutions. Included is information on the steps required for proper compression, purification, storage and distribution of pure breathing air, as well as a review of current standards.

For copies of the article, entitled "How To Make Good Respiratory Air Consistently and Economically," write to: Robbins Aviation, Inc., 3817 Santa Fe Avenue, Vernon, CA 90058. Include the name of the article in your request.



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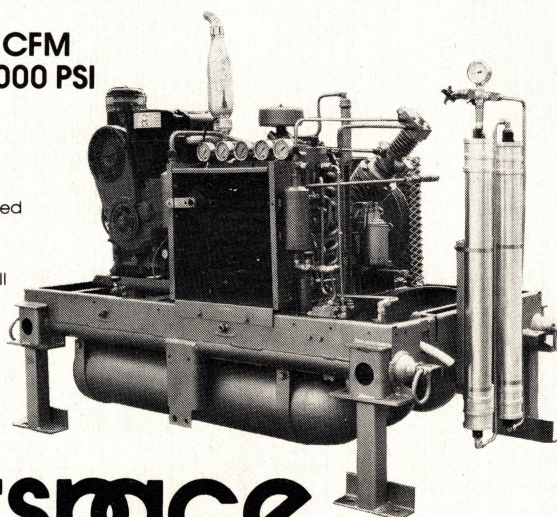
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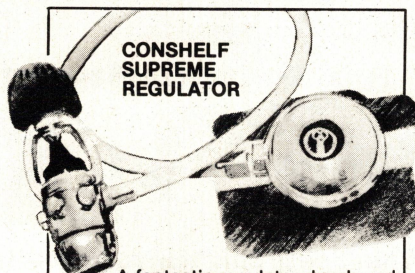
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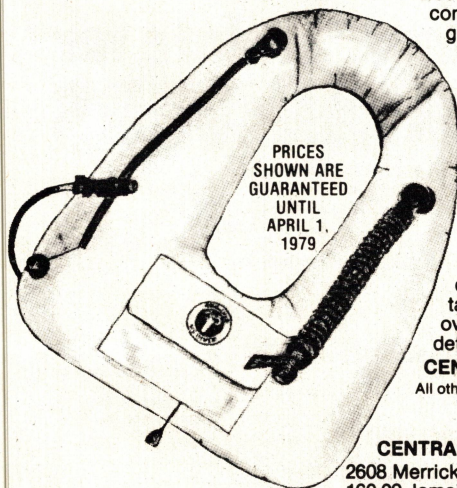
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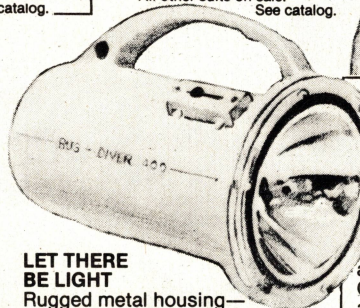
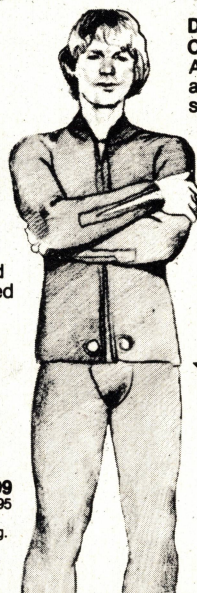
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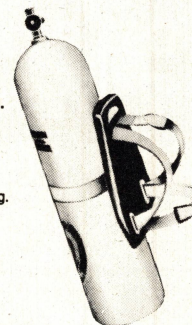
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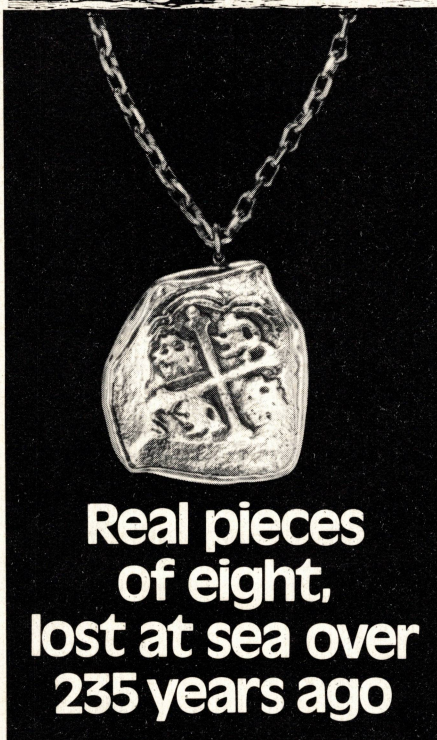
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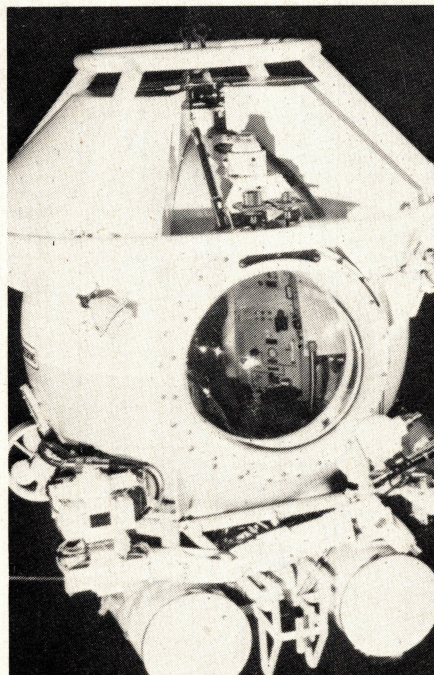
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DEPTH RECORD

Oceaneering International has announced that the Ocean ARMS I, a one atmospheric diving submersible, successfully completed a record dive on August 3, 1978, off the coast of Nova Scotia. A depth of 2842 feet was logged and certified by Lloyd's of London, establish-



ing a new world record for a fixed buoyancy manipulator bell.

Launching and recovery operations were conducted in ten foot seas. The men conducted a wellhead inspection at this record depth. They remained in a comfortable, one atmosphere environment, without the need for decompression. The successful inspection, in water depths more than twice the height of the empire state building, represents a giant step forward in ocean technology.

SAN DIEGO RESCUE UNIT

The Rescue Unit of the San Diego Council of Diving Clubs was organized as a community service to assist in the rescue and recovery of persons involved in mishaps while participating in aquatic events in San Diego County.

Being a non-profit organization, the unit runs on well trained volunteers and donations. At the present time the Rescue Unit has acquired a 14 foot Boston whaler from the U.S. Coast Guard that needs repair.

If your organization is interested in making a donation of \$100, the San Diego Council of Diving Clubs will provide ad space for you in the Diver's Log, a bi-monthly dive publication. For a \$500 donation, the council will, in addition to the above, put your organization's name

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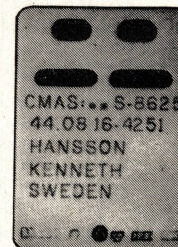
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or decal on the side of the Boston whaler, so that all might see the name of the supporting organization.

For information, contact: Michael Spence, San Diego Council of Diving Clubs, P.O. Box 9259, San Diego, California 92109.

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California Skin Diving Schools, Inc. is proud to announce the opening of their newest 6700 sq. ft., ultra-modern scuba diving school/store, located in Riverside, California.

The building is modernistic, with rounded corners and a glass front. Housed within is a 20 by 40 foot diver's training pool, with a vertical wall dropping from 4 to 14 feet. A unique underwater sound system offers direct verbal communication between instructor and student and piped in music. Adjacent to the pool is the air filling station. The air system was developed after years of experimentation and uses two high pressure compressors and a low pressure system to drive a pneumatic amplifier for air fills up to 5000 psi.

Above the spacious showroom on the second floor are adjoining classrooms which feature complete, up-to-date video systems and instructional aids.

For additional information contact California Skin Diving Schools, 8099 Indiana, Riverside, CA 92504.



SHARK DOCUMENTARY

Survival Anglia Ltd. is currently preparing a one hour wildlife documentary special on sharks, set to air on NBC this season. The production company has teamed up with underwater cinematographer Stan Waterman and author Peter Benchley to produce an in-depth look at the natural behavior of sharks.

Sharks is currently in production, with the first phase of photography having just been completed off the coast of California. Waterman and Benchley will travel to the South Seas and Australia to complete the second and final phases of production. Waterman's team of underwater cinematographers have already captured some never-before-filmed examples of shark behavior which should shed some interesting light on these feared undersea creatures.

The special will air on the NBC television network as part of a multi-project contract with Survival Anglia Ltd. Air-dates have not yet been announced.

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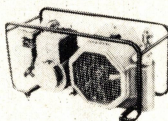
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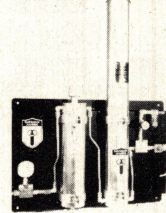
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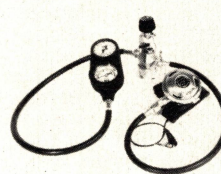
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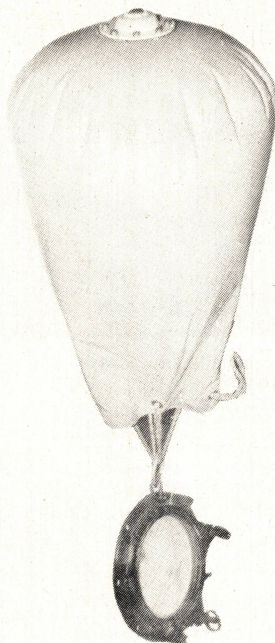
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METER MAGIC

(Continued from Page 55)

1. Set the meter for the ASA rating
which you usually use, and for the shutter
speed which most closely matches that
ASA rating (ASA 64 and 1/60 second, for
example).

2. With a bright sun behind you, aim
the meter downward at about 45 degrees
and meter off your lawn. The meter
should read within one-half of f16. If
you don't have a lawn, or other grayish
subject, meter off the palm of your hand.
The meter should read within one-half
stop of f22. If you have neutral density fil-
ters, you can check the lower-numbered
stops once you have established f16
(or f22).

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12	32	80	200	500	1250
16	40	100	250	650	1600
20	50	125	320	800	2000
25	64	160	400	1000	3500

These are the ASA ratings indicated by the
numbers and dots on the film speed dial of
an exposure meter. Read down the columns
from ASA 12 to 3500.

If your meter gives readings which
tend to under- or overexpose, you can
often compensate by increasing or de-
creasing the ASA film speed setting on
the meter. As stated earlier, the film
speed scale is one-third stop intervals —
increase film speed to reduce exposure,
and decrease film speed to increase
exposure. >035

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AB SEEDING UNDERWAY

In November 1978, marine biologists
planted 10,000 juvenile red abalones off
Palos Verdes Peninsula, Los Angeles
County, as the first step in a three-year
experimental program to determine the
feasibility of restoring abalone popula-
tions in Southern California by seeding.

Before Oct. 1, 1979 — which will mark
the end of the program's first year—
101,000 abalones ranging in size from
one-half inch in diameter to one and one-
half inches will have been planted in
Southern California waters at a cost of
about \$200,000.

Participants in the program include the
California Department of Fish and Game,
Sea Grant teams from the Scripps Insti-
tution of Oceanography and the Univer-
sity of California at Santa Barbara, and
the Fish and Game commissions of
Orange, Ventura and Santa Barbara
counties.

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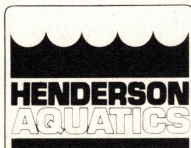
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Verdes Peninsula, 20,000 pinks and greens; Laguna Beach, 30,000 pinks and greens; Santa Rosa Island or San Miguel Island, 31,000 pinks and greens; and Naples Reef, Santa Barbara County, 10,000 red abalones.

Heading the experimental program are Richard Burge of Morro Bay, a DFG marine biologist, and Dr. Mia Tegner, a marine biologist with Scripps. Three biologists from Scripps and two from UC Santa Barbara are assigned to the program full-time for follow-up and monitoring. Fish and Game marine biologists are participating in the program part-time.

Burge said the Orange County operation is a cooperative project by the DFG and the Orange County Fish and Game Commission, which has allocated funds to purchase 10,000 of the juvenile abalones. The DFG is putting up funds for the other 20,000.

Prices vary according to size, Burge said. For the Palos Verdes seeding just completed, the department paid 55 cents apiece for one inch diameter abalones a year old and 88 cents apiece for one and one-half inch diameter abalones a year and a half old. It will take about six years for the abalones to reach legal size, but they should start spawning within one to two years.

The entire coastline from Palos Verdes Point to Dana Point in Orange County has been closed to abalone taking for the specific goal of rehabilitation of the abalone population. Seeding is a major part of this rehabilitation effort.

Burge said the plants in the Channel Islands are being made in cooperation with the Ventura Fish and Game Commission, which is paying for 15,000 of the 31,000 abalones, and the Santa Barbara plant at Naples Reef is being made in cooperation with the Santa Barbara Fish and Game Commission, which has allocated \$3,000 for operational funds.

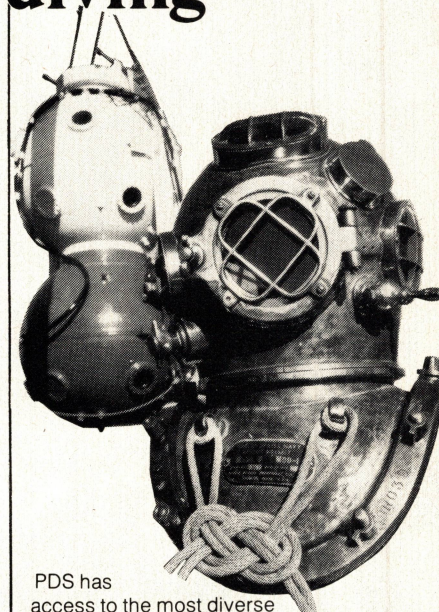
The abalones are being obtained from two sources: Monterey Abalone Farms of Monterey and Ab Lab of Ventura. Burge said funds for the DFG's abalone purchases were made available as compensation for alleged marine life losses caused by the Pacific Gas and Electric Company's Diablo Canyon nuclear project in San Luis Obispo County.

In all, the federal Sea Grant program is putting up \$71,500, the three county Fish and Game commissions between \$12,000 and \$13,000 and the state Fish and Game Department and state university system \$113,600.

Of the latter amount, \$80,000 is being provided by the DFG and, or that, \$50,000 comes from PG&E.

In 1975 the DFG seeded 14,000 juvenile red abalones off Laguna Beach, but the abalones failed to survive because of water conditions. Another 2,000 had been planned earlier off the Palos Verdes Peninsula, but it was difficult to measure the survival rate because of the lack of personnel.

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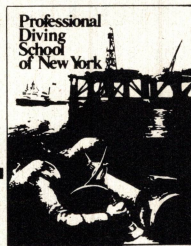


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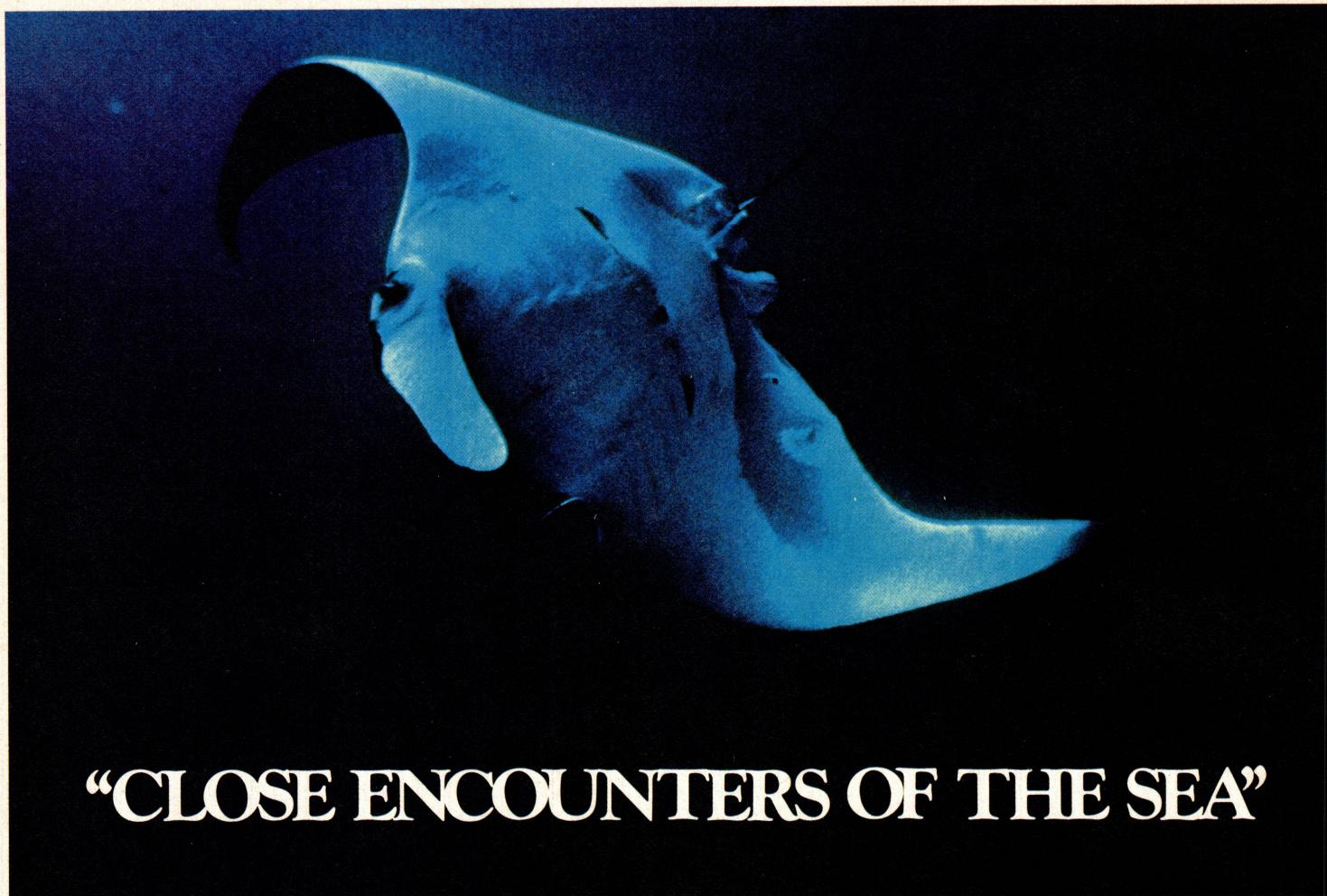
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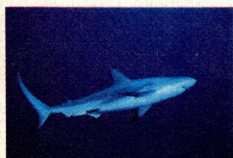
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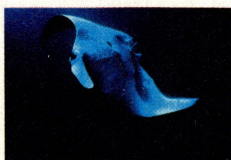
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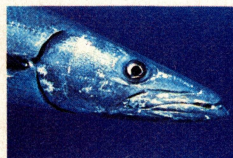


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SDH29

SDM TRAVEL SECTION

WHERE TO GO/HOW TO GET THERE/WHAT TO DO

Not long ago I was sitting in the Fort Lauderdale airport waiting to board a flight for a remote dive resort, when the attendant informed us that the baggage limit would be enforced. No passenger could take more than 44 pounds of luggage; the remainder would follow on another flight. I watched the passengers pour through their luggage, madly unpacking and repacking, deciding whether to take their strobe or their diver's light, their land camera or their first aid kit, their sport coat or their jeans. I watched the flurry, then repaired to the bar for a cold beer before takeoff.

You see, when I travel I'm a disciple of Murphy, the sage who authored the law "If anything can go wrong it will." And when it comes to airplane travel to foreign lands, Murphy is always present.

My first assumption is that my bags may not make it to the resort the same day I do. There is some possibility they may never make it. To beat the odds, I always take a carry-on bag filled with items to meet my rock bottom living requirements. It's my survival kit. It's small enough to fit under the seat — that's a requirement for carry-on bags — and, like my other bags, has a shoulder strap so I can carry three or four at once and beat the high cost of tipping porters. In my carry-on bag I pack:

Enough traveler's checks to pay my bills (some resorts *do not* accept credit cards).

Any prescription medicine I require, including Lomotil in case Montezuma tries to ravage my innards.

A full shaving kit, including aspirin, Alka-seltzer (for hangovers), a toothbrush and toothpaste, a razor, insect repellent (there can be a lot of hungry bugs in the tropics) and something to stop the itches, Sudafed and Marezine (to prevent anything from spoiling my diving), the antibiotic Neosporin, roll-on deodorant (to protect my friends and the ozone layer), fingernail clippers, and a couple of bandages.

One change of clothes, and a pair of sandals, shorts, a T-shirt, a bathing

suit, and a light jacket or sweater.

Passport or birth certificate (depending upon the requirements at my destination), airline tickets, hotel reservations and deposit slips, etc.

My car and house keys (so I won't need a locksmith when I get home).

A couple of books to thwart boredom.

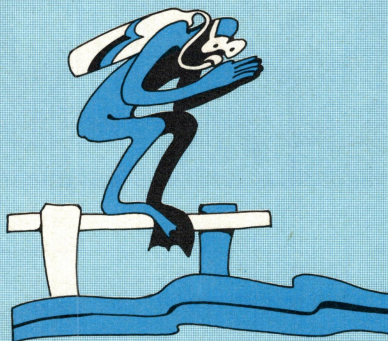
Now if my bags never arrive, I can survive. Frankly, besides my dive gear I usually need nothing else. But then, I always overpack.

I also make the assumption that if I'm flying on a small airline to a remote



WHAT TO TAKE WHEN YOU GO

By Ken Smith



retreat, someone in the airline's heirarchy may decide to fill up the baggage compartment with his own contraband and I'll be faced with the 44 lb. limit. To beat the rap I fill my dive bag to the 44 lb. limit with the next level of essential gear. If I must leave one bag behind, it will be the third, containing only extraneous items.

Before you pack your dive bag, let

me issue a single caution. If it's boldly marked "Joe's Dive Shop, Walla Walla, Washington," you are advertising the \$1,000 contents. You may enjoy swells of pride when tourists who spy the label show you the same respect they show Jacques Cousteau; you will enjoy swells of bankruptcy when the advertisement encourages a baggage room thief to slit open the side and pull out your regulator.

What you put in your dive bag is your choice.

If you don't know what gear you should be diving with, then I urge you to repeat your certification course. Nevertheless, for tropical trips a few tips are in order!

If you're traveling to a resort advertised in *SKIN DIVER*, you can normally expect that tanks, packs and weights will be provided. If you own the rest of the necessary gear — or can borrow it from a friend — bring it. With your own gear you will not have to hope that the rental equipment has been properly maintained and you will not be left at the dock if there are not enough rental regulators to go around. If, like many new divers, you find the high cost of gear prohibitive and intend to rent, be sure to write ahead and specify the gear you need and request a confirmation that it will be available. Most full-fledged dive resorts have enough good BC's and regulators for their customers. Many, however, have tanks equipped with j-valves and do not provide pressure gauges. Few resorts rent depth gauges and none rent dive watches.

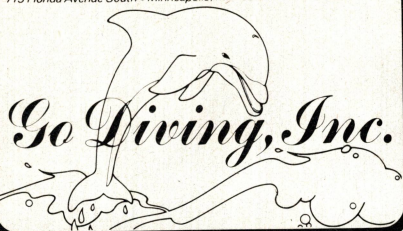
Most divers find a wetsuit top is necessary to prevent chill. Some use a full suit to prevent cuts and scrapes against coral, but old pants and a sweatshirt will suffice.

Canvas gloves to prevent cuts, and socks to prevent chafing, can replace rubber gloves and booties.

The prepared diver packs a number of back-up items to handle minor emergencies when aboard a dive boat. I pack a spare mask strap and a spare fin strap, a couple of screwdrivers, hose clamps, a pocket knife, a couple

(Continued on Page 100)

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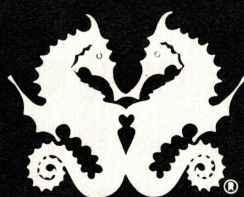
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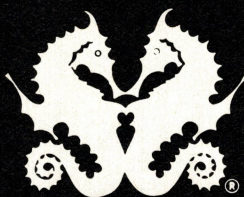
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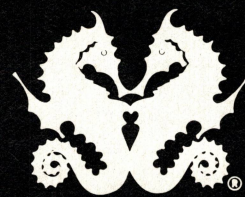
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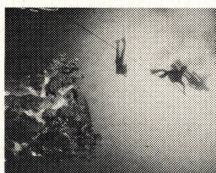
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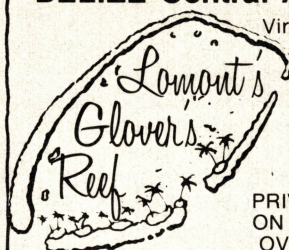
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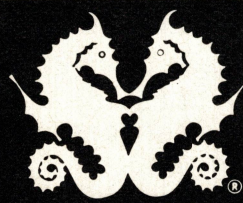
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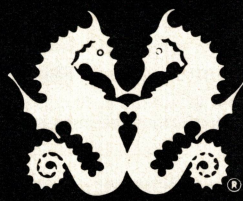
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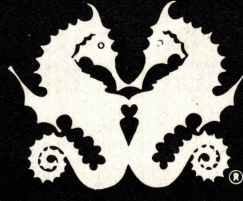
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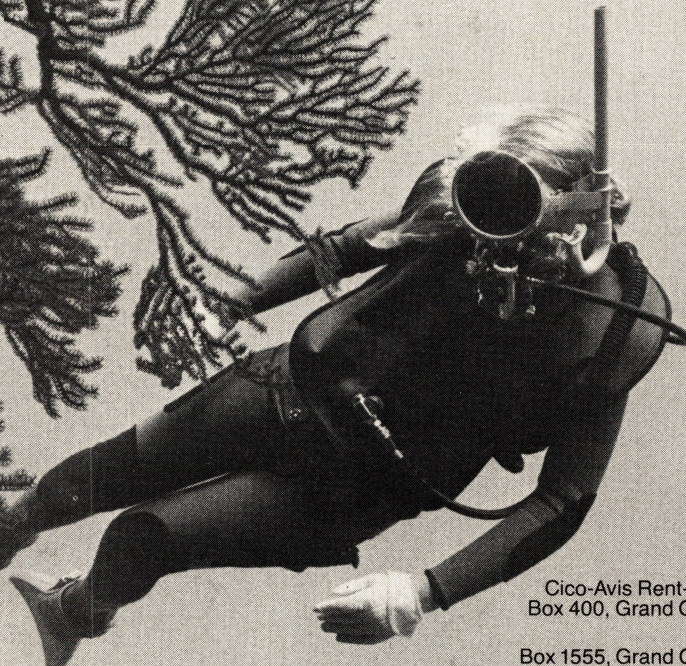
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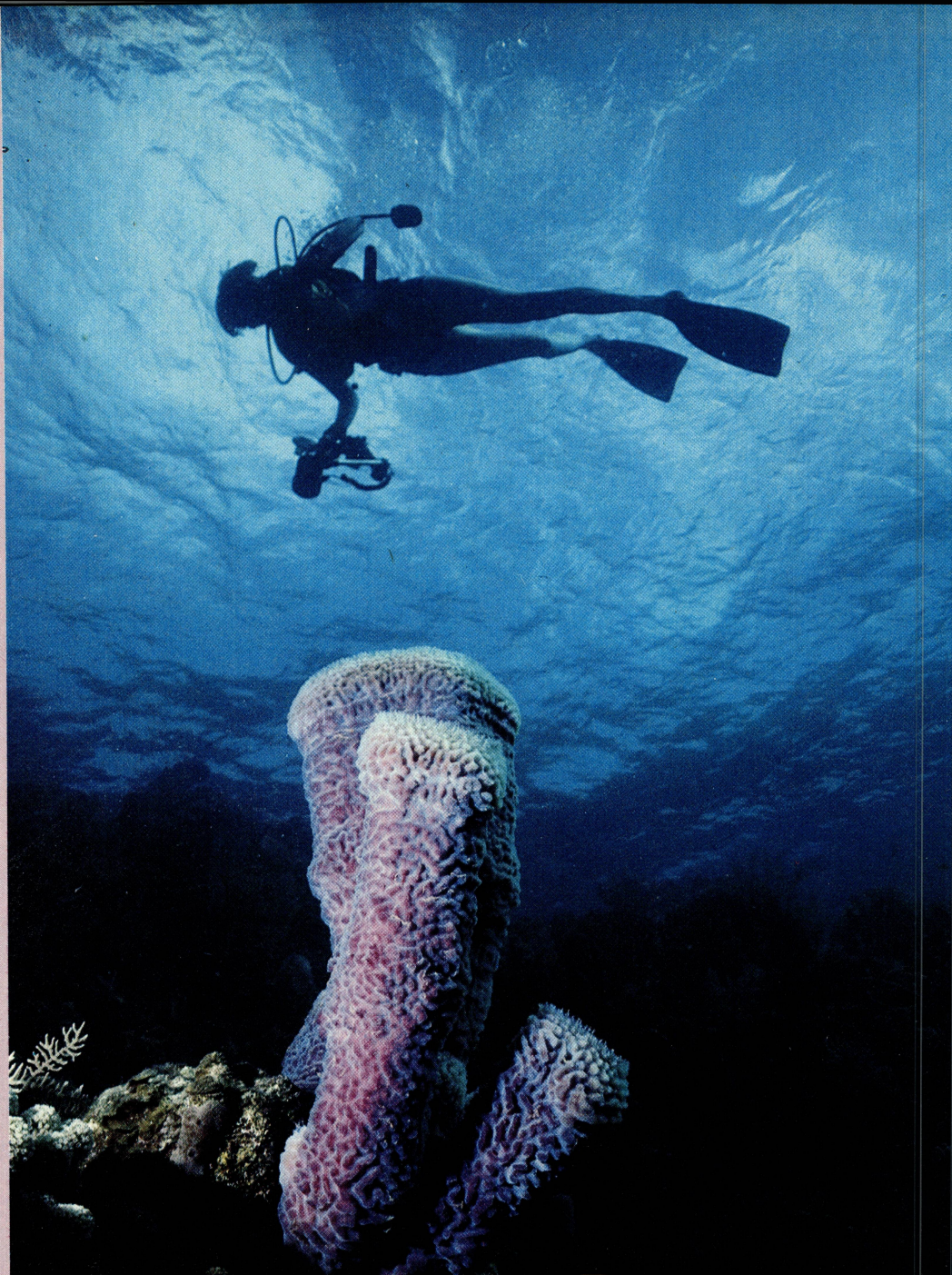
Just three hours from Miami, the Bay Islands of Honduras offer excellent diving and relaxation. Roatan and Guanaja are the two islands which feature full service dive resorts. Roatan is the largest, with scenic mountains, winding roads and beautiful tropical beaches. Guanaja occupies an area of 21.6 square miles with mountains reaching to 1400 feet, mangrove swamps and canals.

When we arrive on Guanaja we are greeted by our host, Tom Fouke. Tom is the owner and manager of Guanaja's only full service dive resort, the Bayman Bay Club. After a brief tour of the town of Bonacca, we load our equipment onto native dories to begin the trip to the resort, located on the opposite side of the island. Dories are used because there are no land roads on this beautiful island. Instead, mangrove canals function as the highways. The absence of car horns, red lights and traffic jams is a welcome relief.

Traveling onward through a mangrove canal, our imaginations run wild. It is as if we were reliving parts of the vivid and romantic past of the Bay Islands.

Upon exiting the canal, we enter a large bay — protected by reefs — and are confronted with breath-taking scenery of tall mountains and shallow corals.

Arriving at Bayman Bay, we are impressed with the simple and natural beauty that we see. The dock area is of wood, with a dive locker at its end and a low observation tower atop the dive locker. Climbing the stairs at the end of the dock, we arrive at the activity building. This is a



BAY ISLANDS

HIDEAWAY IN

Guanaja And Roatan Are Idyllic
Jungle Islands Off Central America

wooden three story building that blends comfortably into the mountainside. The first story has a bar, dining area and outside patio overlooking the sea. On the second story we discover a lounge area, library, chess board and a view of the bay and reefs. The third story is an observatory with hammocks, an excellent place for star-gazing and a favorite after-dinner hideaway.

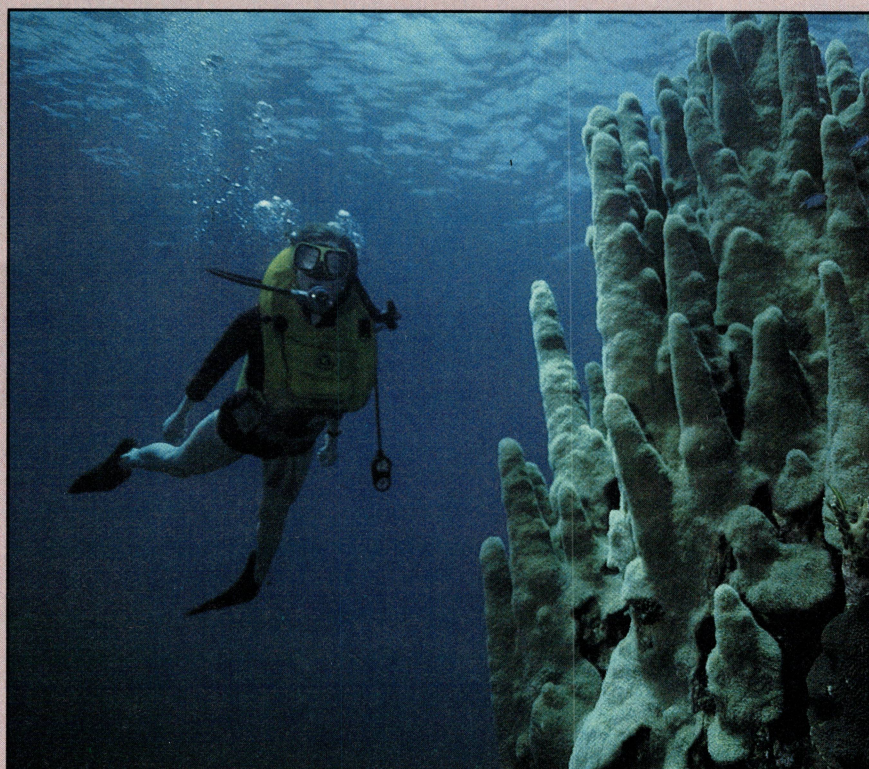
Lodgings for guests consist of spacious wooden cabins. Each of these is furnished with two double beds, adequate storage space, a

ceiling fan, good ventilation and an abundant supply of hot water. In addition, the cabins are spaced far enough apart to give each resident total privacy. The design has been well thought out and fantastic sunsets can be observed from your own balcony. Bayman Bay is definitely one of the most romantic resorts to be found anywhere.

The dive locker features a suitable compressor and well maintained dive equipment. Air fills are always topped and rental equipment is available upon request. The dive

boat, though slow, is comfortable and, with the proximity of the best dives, there is no need for more speed. However, plans are being made for two faster boats, one to be used for diving and the other for fishing and water skiing.

Back at the activity building, the resort's dive policies are explained and questions concerning diving and other activities are answered. A list is circulated to determine the equipment needs of each diver. The resort provides the tanks, backpacks, weights and weightbelts.



Diving the Bay Islands is like a trip through *Fantasia*. It is an adventurous journey into color and shape. Huge sponges, hard and soft corals and an abundance of tropical fish make this a true underwater wonderland. The Bayman Bay Club is Guanaja's only full service dive resort.



The verdant tropical beaches of the Bay Islands create an atmosphere of peace and tranquility. A trip to the ancient Mayan ruins on the mainland is a must.

HONDURAS

Text and Photography by Tom Mount

The next logical step is to do some beachcombing and snorkeling. We discover a beautiful beach. A few yards out, an excellent shallow reef is loaded with sea anemones, tropical fish and its own resident barracuda. Returning to the dive locker, we are joined by Tom and decide to swim out a few yards to the next reef area. This reef is about 25 feet deep with an abundance of elkhorn corals, small groupers and soft corals.

We return to the dock. After the equipment is washed and secured, a retreat is made to our cabins to clean up and relax.

Later, we ramble down to the bar for a cocktail, and discover two favorite snacks, popcorn and boiled shrimp. Dinner is another adventure, with local cuisine served "family style."

Breakfast is simple but delicious, with more than abundant servings. A quick stroll along the beach, and a loading of cameras bring us to dive time. Today's first dive is at Mike's Reef, an area of many sea caves, a small resident nurse shark that is quite shy, damselfish and numerous colorful corals. The reef here starts at about six feet, with a maximum

depth of 60 feet.

After lunch, a quick nap and a reloading of cameras, we depart for the afternoon dive. Tom has decided to take us to the cut and it proves to be a dive reminiscent of Alice in Wonderland. A well-structured surge channel, with many colorful soft and hard corals to either side of us.

On our second full day, the first dive is the pinnacle. This is an area of brilliant red sponges, deep water gorgonians and Jack, the friendly horse-eye jack. The pinnacle is adjacent to the wall, starts at 130 feet and rises up to 60. It is



HIDEAWAY

about 15 feet across at the top and almost circular in configuration. The base is perhaps 50 feet in diameter. Our friend Jack discovered hair on this dive and took a nip of Barbara's, which caused several interesting reactions on her behalf. Her comments, though not understandable in the water, were still obvious and Jack did not take a second nip.

The afternoon dive was at Variety Show Reef, named for the large variety of tropical fish to be found here. Bar hamlets, the largest I have ever seen, were common, as were longnose butterflyfish, shy ham-

when you feel you are in paradise. With great sadness we loaded our gear on board the dories and bid goodbye to Tom and his Bayman Bay resort.

During the flight to Roatan we reviewed the history of the Bay Islands. Between 1516 and 1517 the Spanish conducted slaving raids to the point which almost depopulated the islands. Then pirates used the islands as a base to strike at the Spanish treasure fleets. By 1649, the pirate menace was so great that the Spanish attempted unsuccessfully to depopulate the islands. However, all natives

sort manager and assigned rooms. There is a choice of cottages on the mountain-side or just across the bay on a small island. We decided on the mountainside cottages. Here again, all is of wood construction and blends naturally into the environment. We were pleased with the quiet luxury and adequate storage area in our cottage.

After checking in with our divemaster, Herbie, we don mask, fins and snorkel and do some skin diving in the bay. Here we discover beautiful shallow areas. At the channel we can stand knee deep, take one step and be in 90 feet of water.

Dinner, as all meals, was fantastic. The waiters were courteous and prompt and selections were well-balanced. During the evenings we sipped drinks and sat on the patio overlooking the sea.

Our first dive is after breakfast at 9:00 am, at the Green House. It proves to be an exceptional dive. Like most dives, our range was from as shallow as 10 feet to a sheer wall that starts at 90 feet. The reefs are rich in corals and beautiful sponges. On the afternoon dive, we visited Peter's Place, another unique reef with translucent sponges and tropical fish.

On this night we chose to dive in the bay and it proved to be an exciting experience. We discovered an octopus and were circled by two rays who simply amazed us with their grace and poise.

Up early again, and some pre-breakfast skin diving, a good way to burn off some of the calories we are taking in at each meal. After breakfast, the boat was loaded with picnic baskets and we departed for West End. The water at West End is even clearer and the reefs are some of the most abundant I have seen in the Caribbean. Upon completion of the morning dive, our next stop was at a beautiful white beach where we hungrily devoured our picnic.

Our last day was perhaps the best, for we dived the famed Hole in the Wall. Rarely does one find well-publicized dives to be as spectacular as they are envisioned, however, Hole in the Wall outstretched even our wildest thoughts. The dive is a must for Roatan divers.

Access to these beautiful islands is through Belize Airlines, TAN or SAHSA. Both Belize Airlines and TAN feature flights from Miami to San Pedro Sula, where one must transfer to SAHSA or LANSEA to complete their flight to the Bay Islands. SAHSA flies from New Orleans to San Pedro Sula.

Our flights have been from Miami and have involved both Belize Airlines and TAN. Belize Airlines flies from Miami in the afternoon, four days a week. TAN features early morning flights.

It seems that weeks pass as if they were days when one is in paradise. With great sadness we packed and left this peaceful island to return to the world of traffic jams, red lights and horns. ➤



Roatan is the largest of the Honduras Bay Islands, with scenic mountains, winding roads and beautiful beaches. Guanaja occupies 21.6 square miles and has mountains reaching to 1400 feet, mangrove swamps and canals. Located three hours from Miami, the Bay Islands are a perfect hideaway.

lets, triggers, basslets and grammas.

One of the beautiful things about diving most of these areas is that they lie in shallow water. Thus, you can drop deep initially and, using Dennis Graver's multi-level dive procedures, get a lot of bottom time without needing decompression. Our dives averaged about 45 minutes and we managed to get a good coverage of each reef we dived.

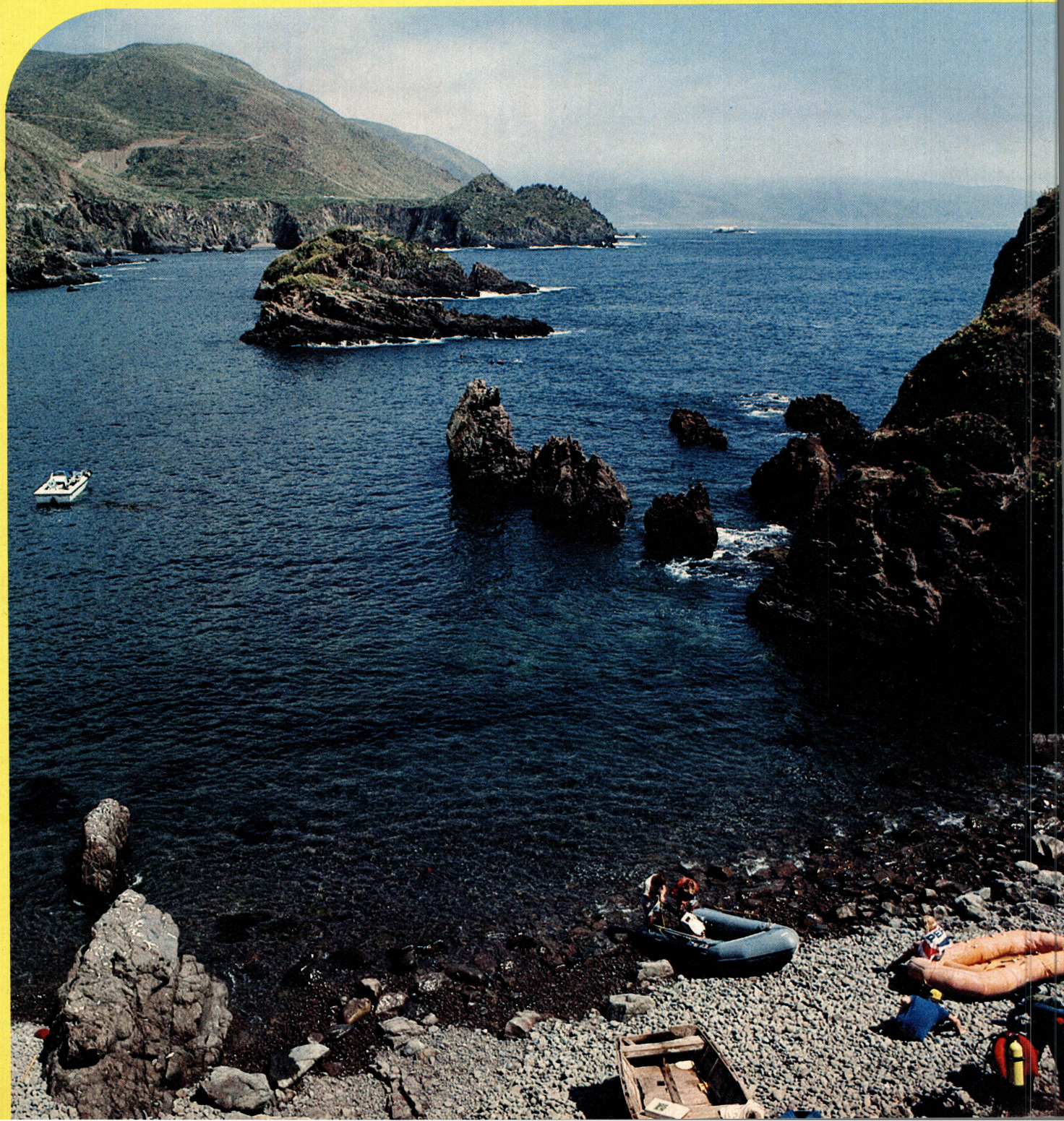
Subsequent dives proved to be even more sensational. Locations such as Palosidades Reef, the Bayman Drop Reef, and my favorite, Fantasia Reef. Fantasia Reef is located just north of Bayman Drop and like the movie *Fantasia*, it is a journey into color and adventures in sight. This dive was one I could have repeated time and again.

It is amazing how fast a week can pass

were finally depopulated in 1850, an action which was intended to reduce pirate activity and support.

Permanent settling of the Bay Islands involved primarily black Caribs and whites from Grand Cayman. This habitation began between 1797 and 1858, and most residents are descendents of these pioneers.

We return from our daydreams as the plane begins its approach to Roatan. The island has several resorts with varying price ranges. A few include Anthony's Key, which was our choice, Pirates' Den, and Spyglass Hill. Upon landing, our equipment is loaded onto four-wheel drive vehicles and we begin our journey to Anthony's Key. The trip across the mountains is breathtaking and exciting. At Anthony's Key we are met by the re-



Baja

Text and Photography
by Frederick D. Clise

Mention diving in Baja California to most people and they'll usually tell you about warm, crystal-clear water with thousands of tropical fish everywhere. Kennedy's Cove, near La Bufadora, on the Pacific, doesn't have warm tropical waters or tropical fish, but the water usually comes close to being crystal-clear, and there is no shortage of marine life: ocean perch, lingcod, and rockcod are just a few of the many game fish available in the area. Because of the cold, nutrient-rich southbound Humboldt current off the coast, the marine life in the area flourishes, and individual animals are generally larger than their relatives in other coastal areas. Three foot long lingcod are common around the rocks in the cove. And the fish aren't the only large animals: sun-stars two and one-half feet across, empty mussel shells nine inches long (something had a feast) and giant anemones are also common.

According to C. M. (Bill) Gray, a San Diego NAUI/PADI scuba instructor and part-time marine historian, decades ago Old Man Kennedy lived in the shacks above the cove and lobstered in it daily. Then he'd row to Ensenada, where he sold his lobsters. The two boat houses and the two shacks in the cove still stand as the only structures in the area — providing you don't classify the one turquoise-colored outhouse as a structure. (More on that later.) After the old man died, his son Ernesto took over the place, but Ernesto's now an old man and has stopped lobstering. Although he doesn't live there anymore, he still returns periodically to visit.

There are actually three coves visible from the plateau above Kennedy's. The two outer ones are full of great diving; the middle one is dangerous. Its huge surge can easily throw a diver against the rocks on the beach as well as the cutting sharp rocks surrounding the cove itself.

The eastern cove is surrounded by steep walls 75 feet high. A hand rope down the only path is recommended for safety and reassurance. Divers who know the area bring their own ropes, because there isn't one permanently installed. This is the largest of the three coves.

Farther east, along the shore, are small caves and a violent blow-hole which shoots geysers of water 30 feet straight out from the opening when the tide and waves are in the proper combination. Past the cave and geyser the sheer cliff wall snakes around and forms a very large cove with a 100 foot long rocky beach. (There's a campsite above that beach, but if you're interested in it, you'll have to find how to get there on your own, this article is about Kennedy's Cove.) Some thoughtful person installed a block and tackle on a swinging arm over the cliff, above the eastern cove, to hoist dive gear and small boats up and down.

The western cove is easier to get to: divers simply walk down the path to the water's edge wearing their gear, then sit in the shallows on the rocks to put on masks and fins, and wait for the gentle surge to lift them out. Divers should beware of the two large rocks just barely covered at low tide as they swim out. Baseball-sized purple

urchins spot the bottom and, although they are more plentiful in the eastern cove, there are still enough in the western cove for an unwary diver to suffer a punctured hand or foot as he or she passes over them.

The steep west wall of the cove plunges down to 40 feet below sea level inside the cove, then drops rapidly to 60 feet at the mouth. This is one of the most popular dive areas at Kennedy's. Large fish can be found at 25 to 40 feet especially around the rocks of the cliff.

The area is almost completely undeveloped. There is no fresh water or fire wood to be found (not even any trees) so bring all the water and wood you'll need. Other than Kennedy's buildings, the only concession to civilization is one outhouse — a treacherous, turquoise-colored box that is just as likely to pitch the user into its depths as anything else. Calling it shaky is a compliment. If you take a close look, you can imagine the wailing voices of souls long ago lost there crying for help.

The "road" to Kennedy's Cove is difficult at the end and shouldn't be attempted by anyone without a four-wheel drive vehicle. To get there drive south from Tijuana through Ensenada and turn off Highway 1 toward the water at the "La Bufadora 22" sign. Continue on that road 11.1 miles. Then take a left onto a dirt trail at the top of the hill above La Jolla Camp, near a rest area overlooking La Bufadora. The dirt trail "road" goes 3.8 miles from the paved road to the campsite. First-timers will find it a thrilling ride. It's a cliff hanger for the

(Continued on Page 100)

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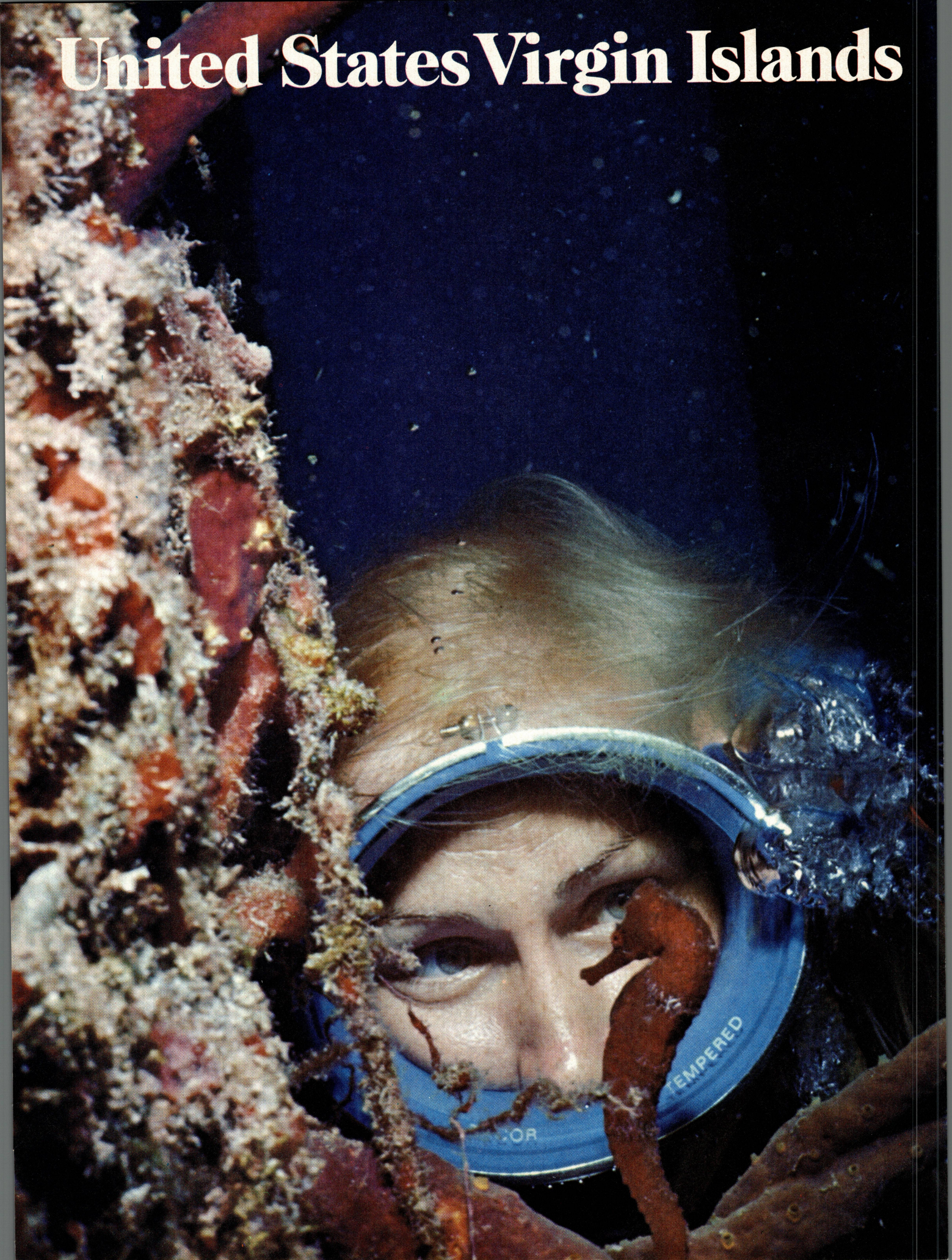
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United States Virgin Islands

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SEA OF CORTEZ PHOTO COURSE

Baja Expeditions, Inc. of San Diego, will run an underwater photo seminar, scheduled for March 16-24, in cooperation with underwater specialists, Leach Photo Systems. The seminar will provide prime dive opportunities with daily photographic lectures,



underwater shooting, and critiques. A photo lab will be set up on board to provide students with immediate assessment of their work.

Total cost of the trip is \$995 and includes round-trip arrangements from San Diego, a week aboard the 120 foot *Baja Explorador* in the Sea of Cortez, dive and photographic equipment and the dive course. Instructors Howard Hall and Marty Snyderman have ten years combined experience in underwater photography.

There are only 21 slots available and those interested are encouraged to contact Leach Photo Systems, P.O. Box 846, Encinitas, CA 92024.

MEXICAN DIVE CONVENTION

Puerto Vallarta, Mexico, was the site of the VI Congress of Underwater Activities, sponsored by the Federacion Mexicana de Actividades Sub-Acuaticas on July 27, 28 and 29th.

Organized by the local dive shop, Buzos de Vallarta, it was a big success, with more than 300 divers attending. The Federacion Mexicana de Actividades Sub-Acuaticas is the national organization that groups all the dive clubs in Mexico.

On the program were three lectures, one every night. In addition to the nightly lectures, there was a dive program — every morning at different sites. The divers were assigned to the different boats according to their degree of dive experience.

The first dive was along the coast at Temixco. The second day the diving was at the Marietas Islands, and the third day at Los Arcos. Before the last dive, a metal plate attached to one cliff was uncovered, reminding every diver that this site is an official National Underwater Park and Marine Preserve, where all forms of marine life are protected by law.

DIVERS POPCORN

In keeping with a long history of firsts, Cap'n Don Stewart of Aquaventure/Habitat on Bonaire has announced the installation of the first popcorn machine in any dive station anywhere in the Caribbean.

The machine was recently installed in Habitat's new dive station, known as "La Shack."

The popcorn machine will be waiting to serve divers returning from reef trips. It is conveniently located near the bar.

PROSPECT REEF, BVI

Prospect Reef Resort, Tortola, BVI, has created a series of comprehensive packages in a winter program entitled, "Come Hide With Us."

"These packages are designed for sailors, divers, lovers and folks who just want to come down and hide away in our good company," said Elihu Rhymer, executive director of Prospect Reef. "They're tailored to appeal to everybody's sense of value. Most people go to the British Virgin Islands for two reasons: to relax in a tranquil atmosphere and to take advantage of the perfect setting for water sports."

Prospect Reef's Atlantis Adventure features a complete scuba program including five reef or wreck dives with underwater photographer/certified instructor, George Marler (safety coordinator for the filming of *The Deep*). Included are a boat, tanks and weights. Pool instructions and an open water check-out dive can be substituted by novice divers for two reef or wreck dives. Included, too, is a guided tour of the *RMS Rhone*, the wreck used in *The Deep*, as well as souvenir Aquatic Center T-shirts.

Atlantis Adventure prices start at \$203 per person, double, for four days/three nights and \$324 for eight days/seven nights. Add \$75 for additional dives, available with the eight-day package only. Add \$5 per day for use of a Nikonos underwater camera.

All rates are EP. An MAP (breakfast and dinner) supplement is available for \$18 per person, per day.

Prospect Reef Resort and Harbour is represented in the U.S. by Prospect Leisure, 515 Madison Avenue, New York, N.Y. 10022; and in Canada by Prospect Leisure, 7 Wabash Avenue, Toronto, Ontario M6R 1N1.

Turks & Caicos Islands

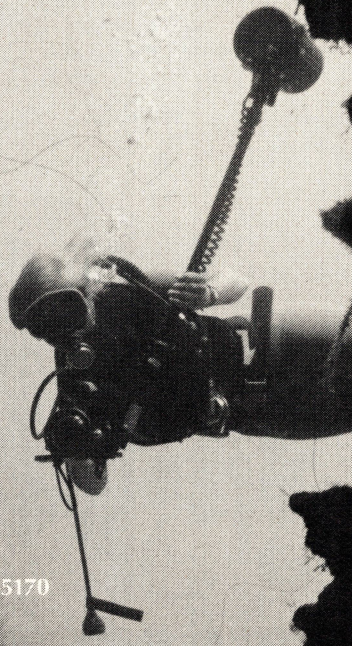
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For further information contact Turks & Caicos Islands Tourist Board, (305) 526-5161, Miami, Florida. P.O. Box 592498, Miami, Florida 33159. Or Minister of Tourism, Grand Turk, Turks & Caicos Islands. Telephone 2321, Grand Turk.

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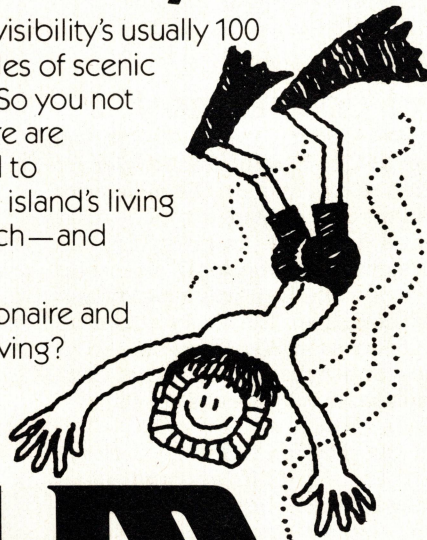


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Mountain Top is a Spanish style home built on a saddle of the hill 80 feet above Gorda Sound, Virgin Gorda, on beautiful Eustatia Island, in the BVI. It affords an unforgettable view of crystal clear waters, coral reefs, pearl white sand beaches and nearby islands.

A unique and peaceful diver-oriented resort, Mountain Top is designed as a demonstration of total ecological living. Power is obtained by wind generator, hot water by solar collectors, and rain water is stored in cool cisterns. Even some of the meals, which include local fish, lobster and conch, will be cooked in solar ovens.

One of the attractions for which the British Virgin Islands are justly famous



Jim Kilbride, left, and Mike Kilbride

is scuba diving. The numerous dive sites feature rare tropical fish; Nemo, the friendly shark, underwater castles of coral; and famous wrecks including the *Rhone*. Mountain Top, in collaboration with Jaki and Bert Kilbride, offers a dive tour package at reasonable prices. The package comprises eight days, seven nights, Modified American Plan (breakfast and dinner), five days of diving, two dives per day, with the Kilbrides, and, or course, unlimited swimming, snorkeling and sunbathing. Scuba instruction is also available.

The Kilbrides have two boats, the 42 foot *Shah* which carries 25 divers and can cruise at 18 mph; and the 30 foot *Saba*, which carries 10 divers.

Accommodations comprise three large, airy rooms, each with private bath and panoramic view. There is also a large bunkroom with accommodations for four divers or more.

For further information, contact: Mountain Top, % Robert J. W. Price, One Pine Road, Beverly, MA.

KANGAROO ISLAND

Some 50 shipwrecks lie off the coast of Kangaroo Island, South Australia. Shallow water wrecks await the novice diver while trickier, deep water wrecks will excite the more experienced folk. Beautiful marine life, crystal clear water and a chance to dive with the seals at Seal Bay will make a trip to Kangaroo Island a once in a lifetime holiday.

For information and travel arrangements, contact: Adventureland Diving and Sports Service, Deep Creek, Kangaroo Island, South Australia. ☛

MCKENNEY RED SEA PHOTO TOUR

SKIN DIVER Magazine Adventure Editor, Jack McKenney, will be leading an exclusive underwater photographer's tour to the Red Sea in September 16-30, 1979. In conjunction with Poseidon Venture, Jack's tour will include daily diving from modern Red Sea Divers boats.

The cost is under \$2,000 from Los Angeles, and from the East Coast it is slightly less. Underwater photo buffs interested in seeing one of the most beautiful areas of the U/W world with Jack's guidance should write: Poseidon Venture Tours, 359 San Miguel Dr., Newport Beach, CA 92660. ☛

ST. THOMAS ITC

Virgin Islands Diving Schools was recently host to a bilingual Instructor Training Course on St. Thomas. Sixteen candidates and seven staff members attended from St. Thomas, Puerto Rico, and Santo Domingo. Representatives from U.S. Divers, Aqua-Craft, Underwater Kinetics, Imperial, Dimension 2, Leach Photo, and the recompression chamber of the Univ. of Puerto Rico spoke to the group.



After eight full days of classroom presentation at the Windward Hotel and open water teaching and evaluations at Coki Point Beach, graduating candidates received their PADI Open Water Scuba Instructor rating.

For information concerning future ITC's in St. Thomas, contact Virgin Islands Diving Schools, P.O. Box 9707,

Charlotte Amalie, St. Thomas, USVI 00801. ☛

HUMAN U/W BIOLOGY PROGRAM

Human Underwater Biology, Inc. will offer another Physicians' Program in Undersea Medicine on the islands of Bonaire and Curacao from March 31 through April 8. The program is approved by the American Medical Association and is applicable for any physician interested in diving and the related medical aspects. It also is appropriate for physiologists, dive instructors, and research personnel.

The program will be conducted at the Flamingo Beach Hotel on Bonaire. The academic schedule will allow ample time for diving. A basic scuba certification course for non-diving physicians and their families is also offered. Diving has been arranged by Peter and Alice Hughes of Dive Bonaire.

Attendees will stay at the Curacao Plaza, Curacao. The recompression chamber facilities of Dr. T. A. J. Kroon and his staff in Curacao will be used for familiarization with the principles of hyperbaric therapy.

For a brochure and academic schedule write: Program Coordinator, Human U/W Biology, Inc., Box 5893, San Antonio, TX 78201. ☛

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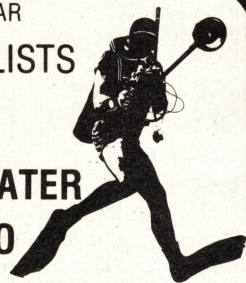
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WHAT TO TAKE WHEN YOU GO

(Continued from Page 77)

of O-rings for tank valves, wetsuit cement to treat unraveling threads or nicks, wax to keep the zippers working, and whatever else occurs to me. For my photography equipment I also pack extra O-rings, silicone lubricant, batteries, and an extra camera/strobe connector. I make the assumption that I'll shoot one roll of film per dive, so I always take along enough film to feed my habit.

Because I overpack, I always take another suitcase filled with clothes I never wear and books I never read. I've reduced my burden a bit by using a large suitcase in which I place my camera case along with the clothes. On the trip back, my camera case travels as separate luggage and I fill the large suitcase with my local purchases. What extraneous items you take is your decision, but I do have suggestions about what not to take!

Don't pack formal attire if you are headed to a dive resort. At ritzy resorts, which offer diving as an extra, a sport coat or a dress might be required for dinner. Or, you might like to dress up of you dine in fancier restaurants. But, any dive resort advertising in these pages require little more than sandals, shorts and a clean T-shirt for evening attire.

Don't pack transistor radios or cassette players. Those who play rock and roll on the beach or on the dive boat are candidates for a deep six.

Don't pack your problems, your troubles, your worries. Murphy's Law always works when you bring excess psychological baggage. Don't create problems for yourself in the otherwise tranquil tropics. A vacation is for good diving, good companionship and good fun. Leave Murphy at home.

ROUGH IT IN BAJA

(Continued from Page 89)

last two miles. The thin layer of dirt, sand, and gravel over the hardpacked trail causes most drivers to sweat more than the Baja sun calls for as they feel their vehicles sliding from the road toward the cactus alongside the trail. There's an abandoned pick-up stuck halfway down the cliff at one point, and some people are convinced that it's a sacrifice made to the hill spirits, with hopes that their appetites are appeased enough to allow safe travel through their lands. At last count there was only one vehicle there, so luck is still holding.

The cove can also be reached by boat from Ensenada or La Jolla Camp, and it's an excellent way to explore the beautiful, untouched coves to the west.

The nearest air station is at La Bufadora, where divers can get a 1500 psi fill for \$2. Most of the people who expend the effort to get to Kennedy's Cove bring extra tanks to avoid the drive up the "road" to the air station. On a long weekend someone might show up with a compressor and sell air, but you'd better not count on it.

The temperature in Baja during the summer is usually high and sunburn, heat stroke, or heat exhaustion are ever-present dangers. Wear a large-brimmed hat during the day to protect the head, nose, and lips and you'll be surprised how well you'll feel, even after an entire day in the sun. At night the temperature drops down to the 50's or lower. Because of the rattlesnakes and scorpions in the area, it's a good idea to select a campsite carefully, and to shake out sleeping bags and clothing before using them. However, don't let the critters scare you out of seeing the almost unbelievable display of stars in the sky after sunset.

The difficult access to the cove prevents it from being crowded. And it's relatively clean, thanks to the considerate divers and campers who clean-up after themselves and others. Don't forget your Mexican fishing license and automobile insurance.

Despite the rattlers, scorpions, lack of fresh water, and the difficult access, Kennedy's Cove is an exciting, uncrowded dive spot with a lot to offer. It is certainly worth the effort to get there.

UNEXSO MED COURSE

For the eighth successive year the Underwater Explorer's Society (UNEXSO) in Freeport, Grand Bahamas, will offer its Basic Diving Medicine Training Program, April 21-28, 1979. Twenty-five hours of category I AMA credit is granted for a variety of topics ranging from hyperbaric pulmonary physiology through the medical problems of saturation diving. Emphasis is placed upon individual instruction in the diagnosis and treatment of dive related casualties and hyperbaric chamber operations.

The medical staff is headed by Edward Tucker, MD, former USN Diving Medical Officer and current Director of Medical Education for UNEXSO and Dive-Med International. Edward Landis, MD, a specialist in pulmonary medicine; Robert Graham, MD, also a former USN Diving Medical Officer; and John Clement, MD, a Freeport physician widely known in the Bahamas for his knowledge in underwater medicine, complete the staff. Their goal is to make all physicians attending the program knowledgeable about and comfortable with the medical problems of the sport of scuba diving.

For information, contact Edward Tucker, MD, 23 S. Main St., Essex, Connecticut 06426.

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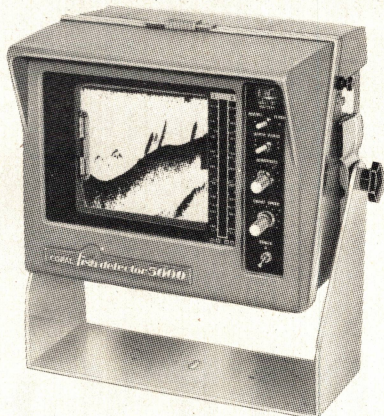


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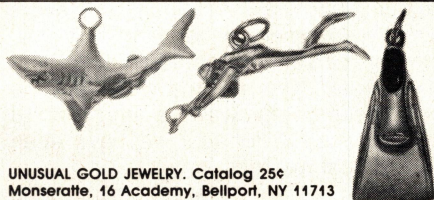
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TOPSAIL EXPANDS

Debbie Ahlgren, president of TopSail Ltd., a new national sales and marketing organization, has expanded her company's sales force with the addition of Jim Lucas as South East Sales Manager. Other TopSail representatives are: Chuck Snyder, Manager South East Sales Group, and Rick Tittsler, Mid-West Sales Manager.

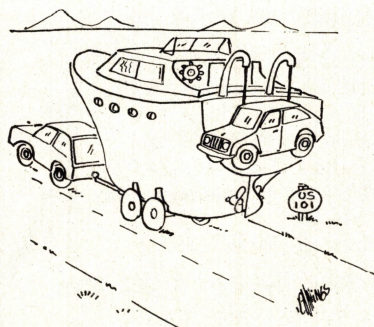
Debbie will continue to personally represent the Western and Pacific areas. TopSail is noted for the Time Capsule Dive Watch and other fine products. Dealers interested in contacting TopSail may do so by writing to 3186 Airway #F, Costa Mesa, CA 92626.

SEA SAFARI'S BVI DIVING

Sea Safari's director, Nancy Ackerman, has announced its schedule for diving aboard the new *Pelorus Jack* in the British Virgin Islands for the year of 1979. The following dates are for eight-day, seven-night trips: March 17, August 25, November 17 and December 29.

Excursions on the *Pelorus Jack* among the lush, verdant, mountainous islands, islets and cays of the British Virgins offer a variety of diving. Samples of the underwater scenery can include: shallow reefs and coral gardens populated by an interesting variety of marine life; seamounts rising from the ocean floor, frequented by large pelagics; picturesque and historic shipwrecks like the *Rhone*, the wreck used in the filming of the movie *THE DEEP*; drop-offs covered with bushes of black coral. Visibility in the Virgins often exceeds 100 feet and water temperatures seldom dip below 80°F.

The skipper and owner of the *Pelorus Jack*, Jim Hapgood, has been in the British Virgin Islands since 1976 and has a well established dive program. The *Pelorus Jack* offers luxurious accommodations. To find out more about this dive adventure, contact: Sea Safaris, P.O. Box 512, Manhattan Beach, CA 90266.



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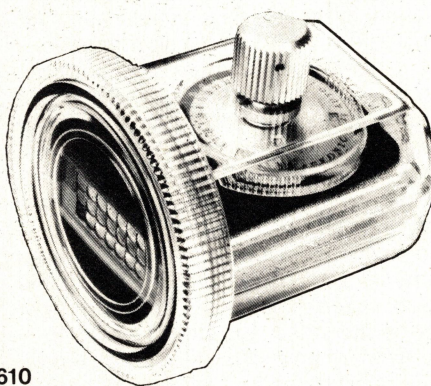
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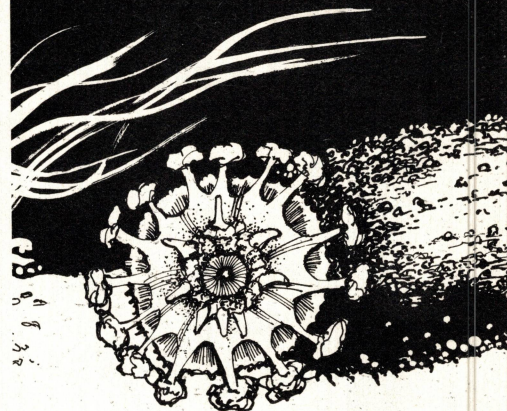


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DELICACY OF THE DEEP

An oft overlooked marine delicacy, the sea cucumber has consistently eluded capture by the majority of West Coast divers because of its uninviting and unlovely appearance. But, the French have been enjoying *beche-de-mer* for decades, and the Chinese *tre-pang* for centuries, and we feel it is time the good old cuke came into its own here in North America.

Ranging approximately from Alaska to California, the giant sea cucumber (class Holothuroidea), an echinoderm, is cousin to the beautiful starfish (class Asteroidea), brittle star (class Ophiuroidea), and sea urchin (class Echinoidea) and favors a rocky-bottomed environment. This slow moving morsel is found from 5 to 50 feet underwater. The records state that the sea cucumber grows to a length of 18 inches, but the longest we have seen was almost two feet.

When considering a cucumber hunt, one is faced with nothing but good news:

There is no regulation size; any and all lengths of cucumber are fair game.

There is no catch limit; as many as you can eat is the governing rule. (As we all know, the sensible scuba diver never has eyes bigger than his or her stomach.)

There are no Keystone Cops chase scenes; the cucumber is simply waiting to be stuffed into a hungry goodie bag.

However, a cucumber chase can be exciting. Make sure you have nerves of steel—if a cuke is sufficiently aroused, it has the disarming habit of spitting out its guts in hopes that you, the predator, will make a dinner out of them instead of it. When the coast is clear, it will calmly settle down to regenerate its intestines and respiratory trees. (We personally have poked, prodded, and tickled these ugly critters with the determination and dedication of the Spanish Inquisition and



Beche-de-mer, trepang...
or just plain sea cucumber

By A. Clark and M. Murphy-Clark

have yet to see this exciting spectacle.)

Our last feast began early one morning in Belcarra Park, just northeast of Vancouver, B.C. where we bagged two love-lies: one a foot long, and our crowning glory, a beauty just under two feet. To add a little spice, we threw in a seven-inch crab.

After capture, one follows five atrociously simple steps. (A word to the wise: The sea cucumber has rather sloppy insides, so take only those approximately ten inches and longer. Otherwise you will be dealing with a horrid, sloppy, gelatinous mess.) With practice, you can complete the steps in an amazing five minutes. Remember: Always keep your catch alive in a bucket of ocean water until cleaning time, or you will have a heap of slime to deal with that even the cat will ignore.

CUCUMBER COOKERY

With the sloppy part over with, it's time to be creative! The following recipes will
(Continued on Page 108)

Gathering sea cucumbers is embarrassingly simple. A goodie bag is the only piece of equipment needed, as this lowly invertebrate seldom escapes a diver.



photography by M. Murphy-Clark

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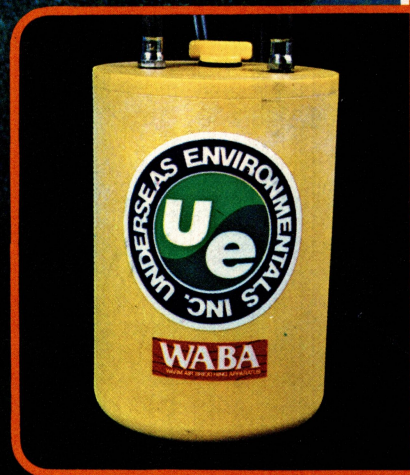
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WARM UP WITH WABA



Text by Bonnie J. Cardone

Unless you dive only in tropical waters, keeping warm underwater can be a major concern. Not only does cold decrease diver efficiency by causing drowsiness, increased air consumption and lack of coordination, it is downright uncomfortable and can be dangerous.

Divers go to great lengths to keep themselves warm. They wear panty hose, socks and T-shirts under their farmer johns, vests and booties and also wear hoods and gloves. Drysuit owners try to minimize seepage inside their suits and often wear long underwear or jogging suits under them. But while divers are concerned with protecting their bodies against cold on the *outside*, few have even thought of what is happening on the *inside*.

Scuba tank air conforms to the temperature around the tank: If you're diving in 64°F water, your breathing air will also be 64°F. This cold air absorbs body heat on

its way into your lungs. *The NOAA Diving Manual* estimates that from 15 to 24 percent of all metabolic heat lost from a diver's body can be attributed to breathing cold air.

Until recently, there was no way to warm scuba air, preventing a drop in the body core temperature and allowing a diver to breathe slower, use less air and stay underwater longer. But now there is the WABA.

Manufactured by Underseas Environmental, Inc., of Baltimore, Maryland, WABA is an acronym for **Warm Air Breathing Apparatus**. It is attached between the first and second stages of a regulator and filled with a hot liquid which warms the copper alloy tubing inside the unit. Scuba tank air passes through the warm tubing on its way to the second stage and is in turn warmed.

The WABA consists of a yellow canister, made of structural foam molded

ABS, with a high pressure hose and fittings of anti-corrosion plated brass. It is 8½ inches high and 5½ inches in diameter. It weighs 4 lbs. when empty and 7 lbs. when filled to capacity with three pints of hot liquid — fresh water, sea water or a water/anti-freeze solution.

The WABA is attached to the regulator by simply unscrewing the hose leading to the second stage and inserting it into the fitting on the WABA. The WABA's short hose is then attached to a low pressure port on the first stage.

Thirty minutes before a dive, the WABA is preheated by filling it with hot liquid through the removable, O-ring sealed water plug. Dive boats usually have hot water or you can bring your own in a thermos. It helps to have a funnel to avoid wasting the liquid. Preheating is not absolutely necessary, but makes the WABA more efficient. With preheating, the air supply will be warmer longer.

Just before a dive, the WABA is emptied and refilled with additional hot liquid. The water plug is tightened by hand (no tools should be used). The WABA is then attached to the metal band of a scuba tank backpack and the band is tightened. The regulator is purged to remove any water in the system and you are ready to go.

SKIN DIVER tested the WABA at both Cortez Banks, an extensive reef found about 80 miles out from San Pedro, California, and at the West End of Catalina Island. At Cortez, the water was 64°F and the 35 minute dive was to a depth of 50 feet. At Catalina, the water was 60°F and the 35 minute dive was to a depth of 40 feet. Since dives without the WABA had just been completed, a temperature comparison could be made. The breathing air was noticeably warmer, and when the layer of water inside the wetsuit warmed up, the diver felt insulated from the cold both inside and out.

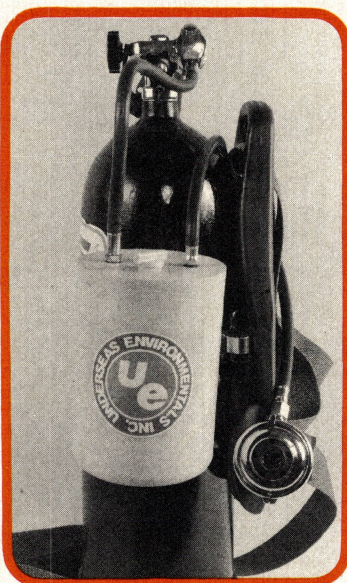
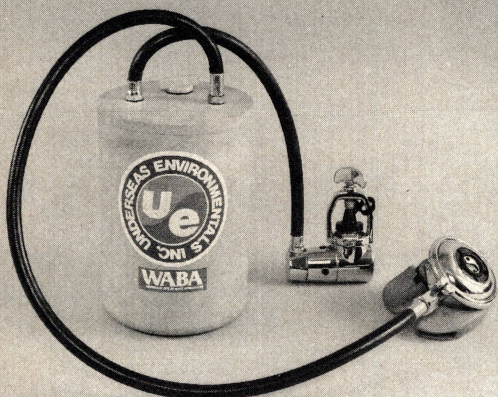
Underwater and on the surface, the WABA has positive buoyancy and creates minimal drag.

After a dive the WABA is emptied and rinsed with fresh water. It should be inverted if stored for any length of time. The fitting openings for the hoses should be kept clean.

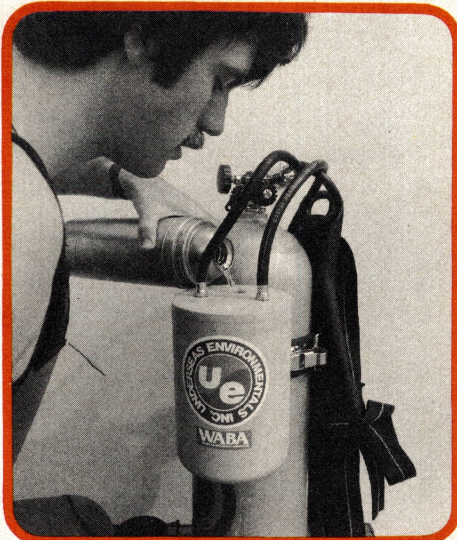
Each WABA is guaranteed for 12 months against all defects in material and workmanship — provided the unit is checked every six months or after 100 diving hours by a visual and static pressure test (which can be done by your dive shop or WABA dealer).

The WABA provides warm air for up to two hours with each hot liquid filling. It is priced at \$189 and available through your dive shop. ➤

Photography by Geri Murphy



Diver Tad Smith test dives the WABA (far left) and pours hot water into it (left). The WABA is attached with hoses between the first and second stages of a regulator. Scuba air passes through copper alloy tubing inside the unit, which warms it during a dive.





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SD-279

DEEP DELICACY

(Continued from Page 103)

give you an idea of how to begin.

If you are boat diving, or camping away from home, the quickest and simplest method is as follows:

1) Slice muscle strips into one-inch pieces.



1. To clean the sea cucumber, place it belly up on a flat surface and chase your hungry cat away.



2. Make an upwards incision from one end to the other and stand back. Cukes go off like geysers.



3. Remove the innards and either discard or tantalize your cat, who has been waiting in the wings.

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Over the years the art and science of underwater lighting has taken giant leaps forward. It has evolved from the days of #5 flashbulbs in homemade flash units (that more often failed than worked) to sophisticated self-contained electronic strobes designed specifically for use underwater.

Bob Hollis, president of Farallon/Oceanic, long an innovative leader in the manufacture of underwater photo products, first introduced the series 2000 strobes three years ago. The first one was the 2001, a single power mode strobe. It proved so popular that the two power, 2003 model followed. These units are rechargeables, reaching their peak charge in just four hours and storing enough power for close to 400 exposures.

Next came the 2000, a smaller and more compact unit, ideal for medium to close-up work. It operates on two C cells, which provide for 300 exposures. The 2000 has been one of my favorites for macro work with a Nikonos camera and extension tubes.

Up to a year ago, Honeywell Corporation supplied existing electronics that Oceanic modified for use in its strobes. When Honeywell dropped out of the photo market, Oceanic designed its own electronics package with some innovations. Most significant is a new breadboard (a small printed electronics board) easily made in-house and especially easy to service. Overseas Oceanic strobe users, for example, can have a service rep in England take out a defective board, replace it, and send the non-working one back to the states in an envelope. Servicing is much faster, easier and less expensive. In addition, the recycle time on the 2001 and 2003 models has been reduced to a maximum of six seconds.

FARALLON/OCEANIC'S FUTURISTIC

2002

IT'S AN AUTOMATIC STROBE

TEXT BY JACK MCKENNEY
PHOTOGRAPHY BY GERI MURPHY

The recently introduced 2002 is a fully automatic strobe that simplifies underwater photography even more. Identical in appearance to the 2001 and 2003, this new automatic unit is also housed in a cyclac plastic housing capable of withstanding pressures to 1000 feet. It has an O-ring sealed screw-in plug that covers the charging port. The strobe can be fully charged in four hours and will fire between 400 and 550 shots depending upon the type of underwater photography.

The 2002 works the same way topside automatic strobes do, with an internal circuitry called a thyristor, and an external electronic eye.

Basically, a thyristor is an energy saving device which has the ability to measure its own light output. When the strobe fires, light emitted from it is reflected back from the subject to the electronic eye, which should be located as close as possible to the film plane. On topside thyristor strobes this electronic eye is built right into the strobe. On the 2002 there is a separate eye connected by an electrical cable to the strobe. This attaches to the camera housing or Nikonos pro grip and is known as a light activated silicone controller rectifier (L.A.S.C.R.). It has the ability to analyze the amount of reflected light, and at a given intensity, sends a pulse to the thyristor, which then interrupts the circuit to the flash tube, shutting off the flash tube prematurely. Depending on the aperture setting and distance, for example, the light duration would be cut back to 1/30,000 of a second rather than 1/1000 of a second.

In practical use, light colored subjects will require less light output, providing a quicker recycle. Darker subjects will require more light, using most of the capacitor's power.

The 2002 L.A.S.C.R. has three filters to allow a graduated degree of flash duration. These filters represent f5.6, f8 and f11. The lighter density filter, representing f11, allows for a quicker light signal giving a flash of shorter duration. The darker the filter, the longer it will take to saturate the eye, resulting in a longer flash. Because the capacitors are not fully discharged, recycle time is cut down. The capacitor saves the unused portion of electrical energy, so it requires only enough battery discharge to bring it up to full charge. For close-up work on f11, recycle time can be as short as three seconds.

On our Red Sea film production trip this year East Coast underwater photographer, Bob Abrams, extensively tested the new strobe under a variety of conditions ranging from close-up work to wide-angle shots.

For wide-angle photography a meter reading is taken. If the meter says f5.6 then the electronic eye and lens aperture are set on the corresponding setting. Regardless of the distance (say from two feet to around eight feet) the strobe will automatically shut itself off when the reflected light is returned to the thyristor via the electronic eye. This results in a properly exposed picture, balancing the artificial light with the surrounding ambient light. For example: At a distance of two feet not as much light output is required as would be needed at seven or eight feet. Shooting with a manual strobe at two feet would require an aperture setting of around f11, resulting in a dark background.

The strobe can be used on a manual setting, too. It is best used this way on dark subjects located against a very light background, because the strobe will read the lighted part of the picture area, resulting in an underexposed dark subject. This is a main consideration when using the 2002.

The 2002 is a reliable and functional strobe for pros, but its real beauty is that the average diver, who might use it just once a month, or only a couple times a year, can be assured of per-

(Continued on Page 110)



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2) Fry in butter from 45 seconds to 1½ minutes, according to taste. (If your goodie bag contains scallops as well, slice them ¼ inch thick and cook alongside.)

Perhaps you have the facilities and



4. Stretch the skin out — (to see what you're up to). The white lateral muscle bands are the edible parts.



5. Insert a sharp knife between the muscle and body wall. Cook the muscle and give the skin to the cat.

want something a little fancier to go with that cooked crab. Cut the cucumbers into one-inch pieces as before and dip in the following batter originally designed for shrimp:

½c all purpose flour

½c water

Blend the above and then add:

¼ tsp. salt

1 tsp. baking powder

Fry as above.

If pressed for ingredients, roll chunks in a whipped egg, then dip in Shake and Bake for pork before frying. Delicious!

If a real feast is desired, why not try it Chinese style?

Boil one cup rice in a pot with lid.

Boil ½c frozen peas in a separate pot.

Cook desired amount of cucumber in butter or batter as above.

Scramble an egg, well done, in a frying pan.

Arrange as follows: Find the prettiest serving plate in the house, boat, or cottage. Combine rice, fried egg, and peas and arrange on plate. Sprinkle cucumber pieces on top.

Once you have enjoyed the "scallop plus" taste of the charming cucumber, you will probably be inticed to try many more recipes of your own devising. Try it — you may be pleasantly surprised. >



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2002 STROBE

(Continued from Page 107)

fectly exposed pictures. You don't have to mathematically compute underwater guide numbers or run lighting tests. Simply take a meter reading, set the electronic eye accordingly and fire away. You can't do any trick lighting, but you'll be assured of properly exposed pictures.

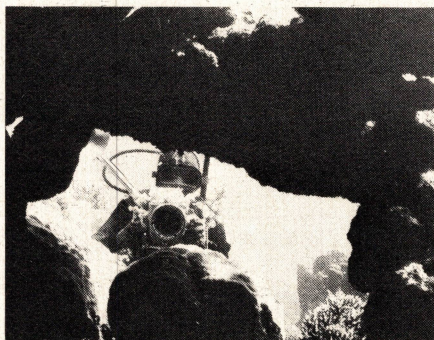
Current Oceanic users will notice that these new strobes have frosted ports. After running a series of tests with the clear ports using a gray card, Hollis found a hot spot caused by the highly polished reflector. With a frosted port the light output is even, with no hot spots. And, there is no drop in light output because the newly designed electronics has capacitance storage somewhat greater than past models. Also, the trigger voltage was reduced from 190 to 15-20. This is the voltage that goes across the camera contacts when the shutter release is depressed.

At \$650 the strobe is expensive, but it fills a gap for people who desire properly exposed pictures without the intricacies of guide numbers and the mental gymnastics necessary with manual strobes.

The 2002 has a one year warranty and is available at most professional dive stores. For descriptive literature write to Farallon/Oceanic, 1333 Old Country Rd., Belmont, California 94002.

U/W TV SERIES

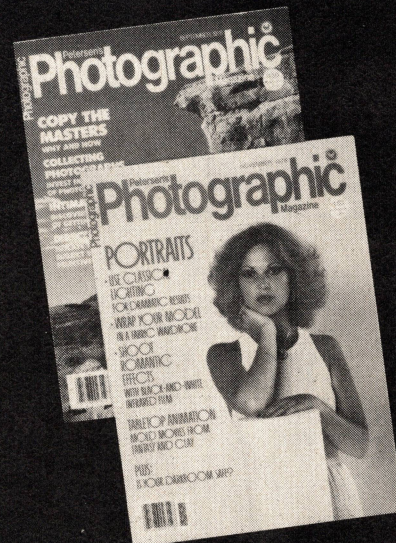
A 13 part underwater science/adventure series, *Exploring the Restless Sea*, premieres this winter on Public Television stations (PBS). Presented by the Oregon Educational and Public Broadcasting Service, the series documents over six months of research by a team of German



scientists exploring the colorful coral reef off the island of Mayotte, between east Africa and Madagascar. The life and death cycle of the reef — predators and prey, parasites and symbionts — is presented in a beautiful U/W drama.

The film series, co-produced by the North German Broadcasting Corp. and the BBC, has won both gold and silver awards in international film festivals. Check local television listings.

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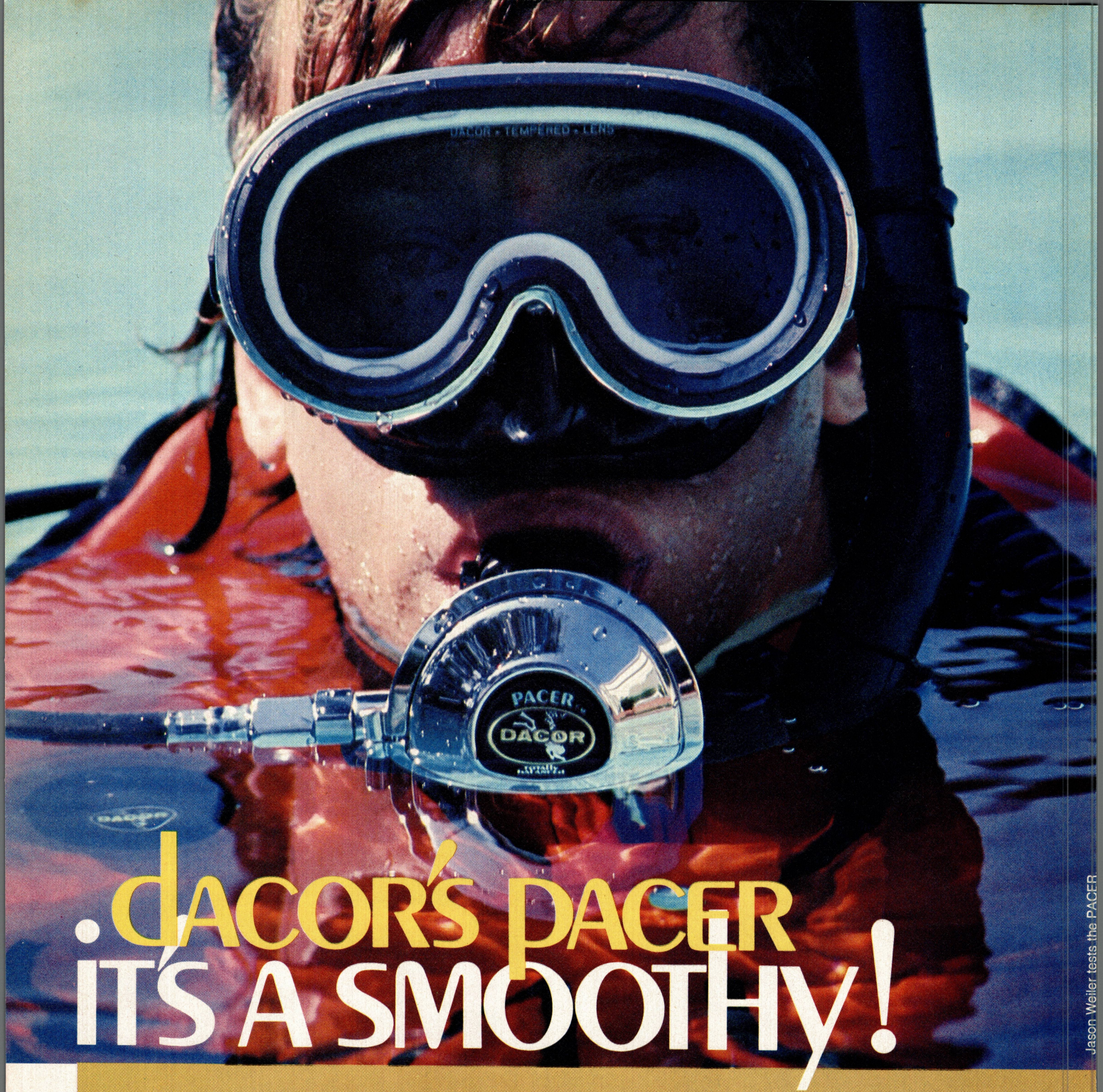
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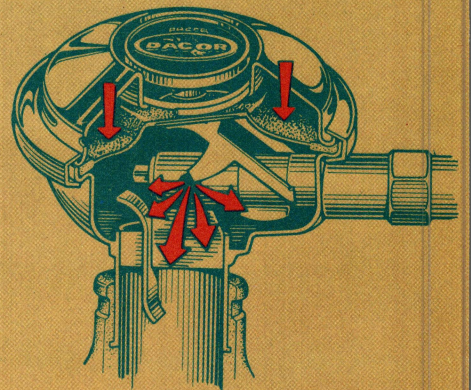
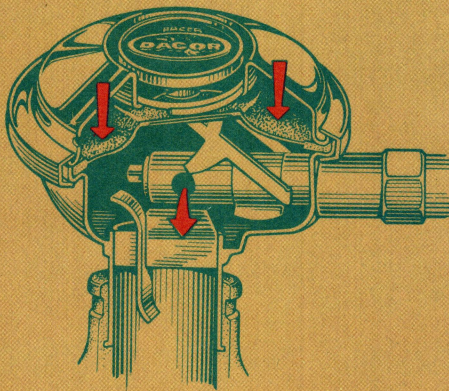
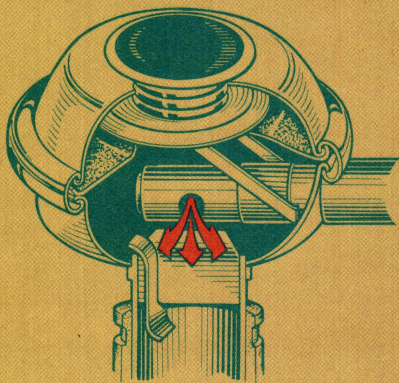


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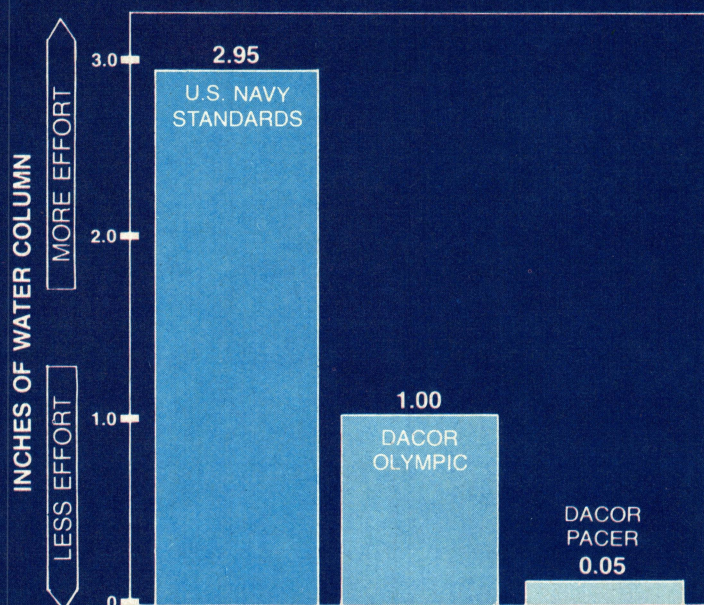
Jason Weiler tests the PACER.



INHALATION BREATHING EFFORT TEST COMPARISONS

This bar chart details the results of actual tests comparing Dacor's new Pacer, U.S. Navy Standards and Dacor's previous Olympic models. The Pacer flowed so easily that the effort was barely measurable and hardly registers on the chart (the lower relative height of the bars indicates reduced breathing effort).

Test Criteria: 3,000 p.s.i. source pressure. Effort measured at 10 c.f.m. flow rate using water column manometer. U.S. Navy inhalation data converted from cm to inches.



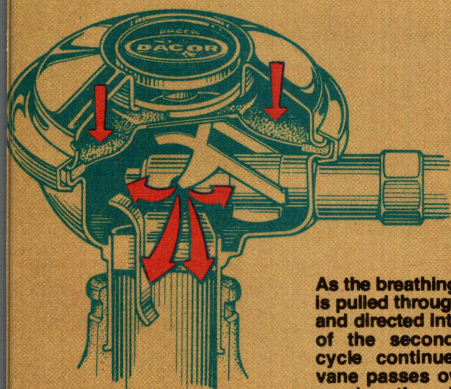
Text and Photography by Geri Murphy

Dacor has recently introduced a new series of regulators under the name PACER, an acronym for Positive Air Controlled Equalizing Regulator. But don't let this highly technical phrase scare you away, because the PACER is really a very simple and ingenious mechanism which provides smooth and easy operation.

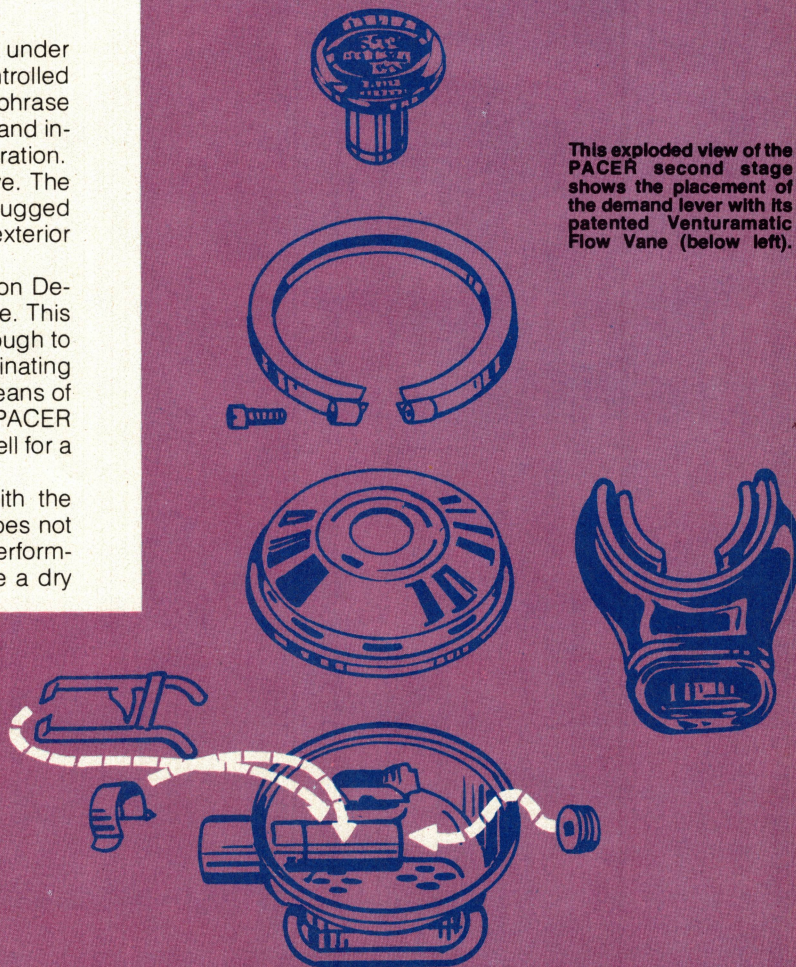
At first glance the PACER does not look overly innovative. The unit has a classic regulator design. The construction seems rugged and it appears to have an especially good chrome plated exterior and finely detailed workmanship.

One new, rather interesting accessory is the Purge Button Depressor that snaps over the front cover of the second stage. This clever little gadget depresses the diaphragm lever just enough to take the spring pressure off the second valve seat, thus eliminating excessive grooving and wear on the face of the seat. By means of this simple accessory, Dacor has made it possible for a PACER owner to keep his or her regulator in tune and functioning well for a much longer period of time.

The big surprise comes when you enter the water with the PACER. It requires very little effort to initiate air flow, yet does not deliver the excessive blast of air so common among high performance regulators. Regardless of whether you sip the air like a dry



As the breathing cycle begins, air is pulled through the venturi hole and directed into the mouthpiece of the second stage. As the cycle continues, the deflector vane passes over the hole, dispersing the air flow and creating a back pressure system.



This exploded view of the PACER second stage shows the placement of the demand lever with its patented Venturamatic Flow Vane (below left).

POSEIDON

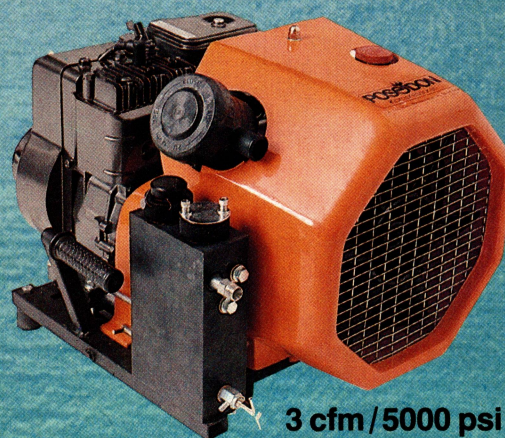
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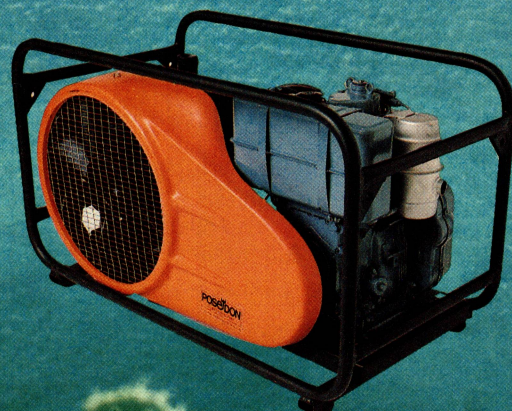
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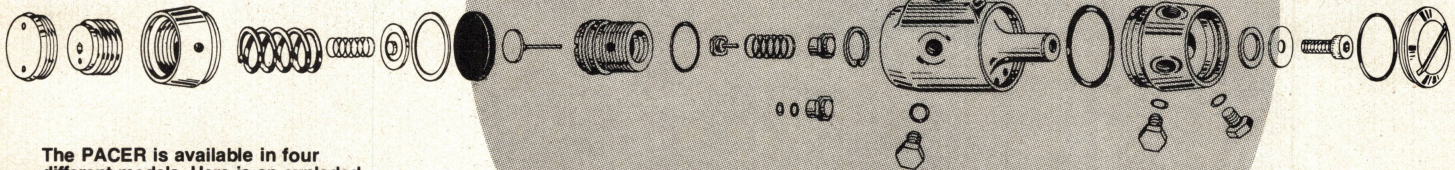
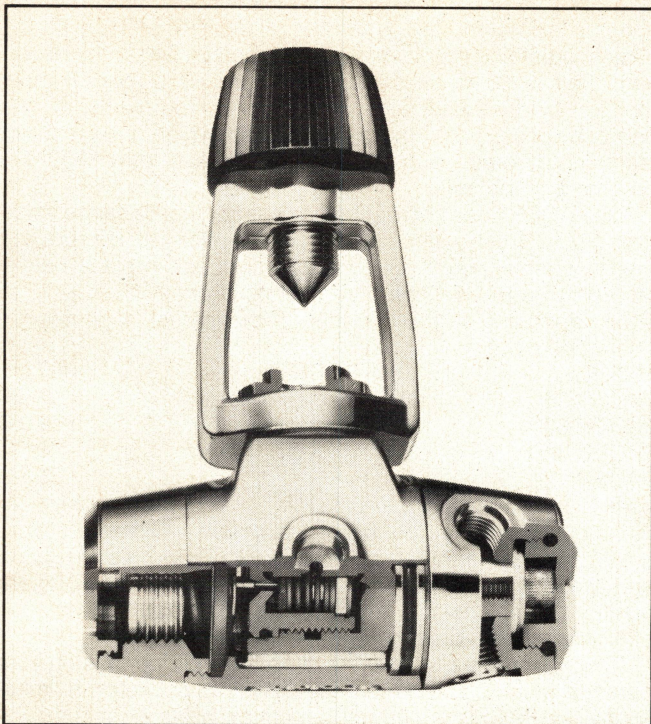


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FOR PURE FRESH AIR!

Photo Mike Swan



The PACER is available in four different models. Here is an exploded view of Model 900, a balanced diaphragm first stage with five ports.

martini or chug-a-lug in great gulps, the PACER's air output is smooth and steady. The regulator's performance is equally consistent through the full range of sport diving depths. During a week of open water testing in the Caribbean, in depths from 30 to 130 feet, we could not detect any noticeable reduction in performance.

Here at last is an extremely stable regulator which provides an even and effortless delivery of air, regardless of breathing rates or volume required. The PACER is a totally new experience in smooth breathing.

What makes the PACER such a smooth breathing unit? There is very little difference in the first stage of these units when compared to Dacor's Olympic series. The PACER is available in four models which are denoted by their difference in first stage design. All PACERS are equipped with identical second stages and this is where you should look for the difference in performance.

Like most of its contemporaries, the PACER is equipped with venturi action which assists the diver in his demand breathing cycle. As a diver starts to inhale lightly, the second stage diaphragm is depressed and thus activates the lever which lifts the valve off its seat. A jet of air is directed toward the mouthpiece of the regulator, thus pushing air into the diver's mouth. Because of the velocity of this stream of air, a partial vacuum is created in the regulator causing the diaphragm to collapse and open the air valve further.

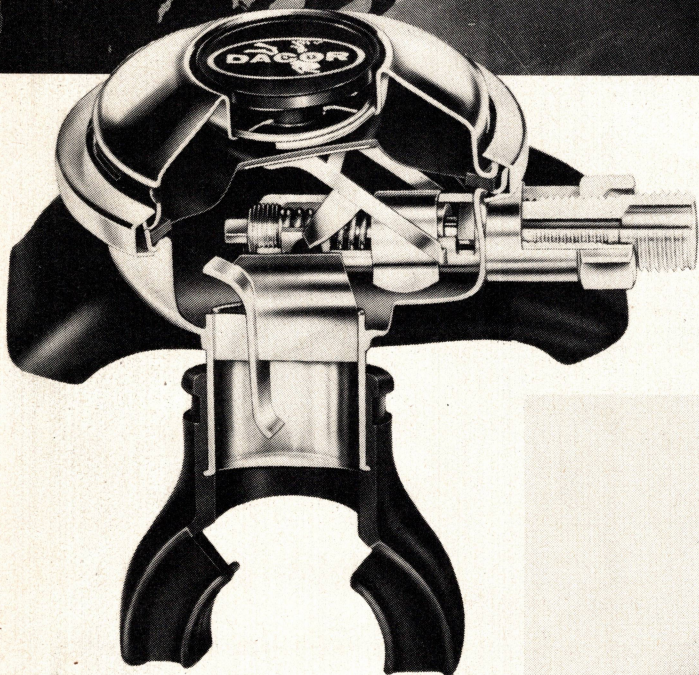
The one big problem with venturi designed regulators in the past was that once the air started flowing it was hard to shut off. In fact, the diver had to almost blow air back into the regulator, or create a "back-pressure," in order to shut down the air flow.

Although the effort required was minimal, it did cause regulator instability and an uneven air flow.

Dacor has now solved this problem with an ingenious device which can be described simply as a deflector vane. An integral part of the demand lever itself, this curved metal vane is positioned directly over the venturi hole from which the jet stream of air flows. As the diaphragm is depressed and moves the lever, air begins to flow in the same manner as most venturi style regulators. Now comes the difference.

As a partial vacuum begins to occur inside the regulator, the demand lever moves farther but the deflector vane begins to pass over the venturi hole, thus dispersing the flow of air and creating a back-pressure system. This little deflector vane automatically shuts down the venturi action before it can start a runaway flow of air. This is why Dacor has christened it the Venturamatic™ Flow Vane, a specially patented and trademarked design. Also included in this system is the Venturamatic Booster Clip which fits onto the barrel containing the valve seat. This clip directs the air flow to create and control venturi, making valve opening easier under high volume demand. Developed by Dacor's top technician and most experienced scuba instructor, Vern Pederson, the Venturamatic control has virtually revolutionized venturi regulator design.

In addition to the Venturamatic deflector vane, all PACER models are also equipped with an Anti-Free Flow Device in the mouthpiece which automatically shuts down free flow when the regulator is removed from the mouth in the water. Still another distinctive Dacor design is the dual exhaust ports which Dacor has utilized for years, making exhalation virtually effortless.



The PACER second stage is equipped with venturi action which assists the diver during the demand breathing cycle. The key to Dacor's new system is the Venturamatic Flow Vane. Model 900 (right) has a deluxe first stage.

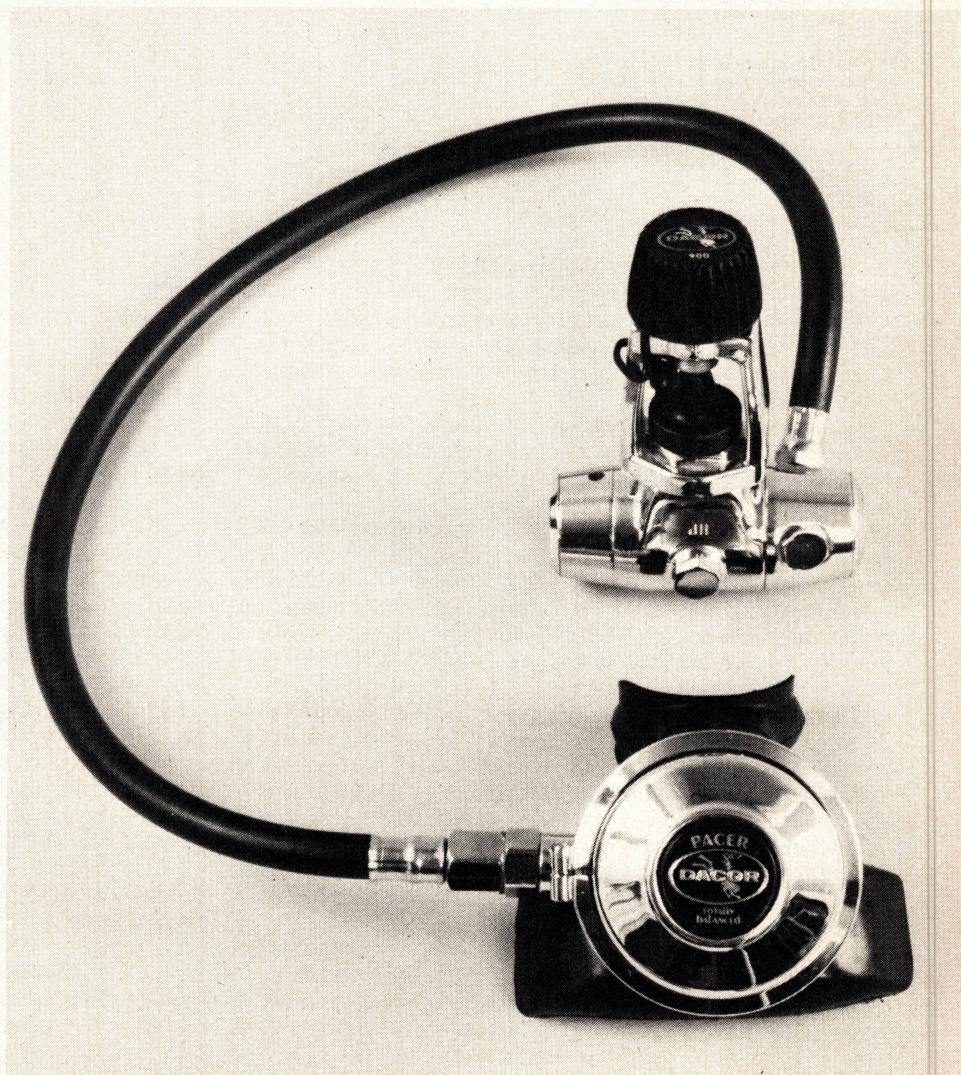
As for laboratory test performance, the PACER is by far the easiest breathing regulator ever designed by Dacor. Its inhalation effort is 20 times easier than previous Dacor Olympic models and far below minimum U.S. Navy requirements. The company chart gives laboratory test data which is the result of tests conducted with Dacor's elaborate new \$50,000 breathing machine.

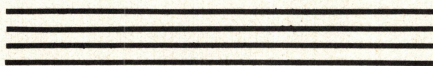
The PACER does not require any special maintenance aside from a good fresh water soaking or rinse after use. Be sure you put the special purge button depressor back in place before storage. The PACER line of regulators is priced from \$115 to \$165 depending on your personal choice of first stage design. The models are as follows:

MODEL	FIRST STAGE	RETAIL
PACER 900	Balanced Diaphragm	\$165
PACER 600	Balanced Piston	\$160
PACER 300	Balanced Diaphragm	\$130
PACER 150	Piston	\$115

All four models, including the PACER 150, have a swivel attachment yoke for proper alignment of low and high pressure hoses. The 900 and 600 both have three low pressure ports and two high pressure ports. The two high pressure ports are positioned with one on each side of the first stage, allowing use of a submersible pressure gauge on either side.

The choice is really up to the shopper and depends on your personal attitude and preference as well as pocketbook limitations. The PACER is already becoming a big hit among the dive shop owners and instructors, and sales are already breaking previous records. To sum up the PACER in three words: It's a smoothy!





UNDERWATER KINETICS' SERIES II



BY JOHN COLUMBIA

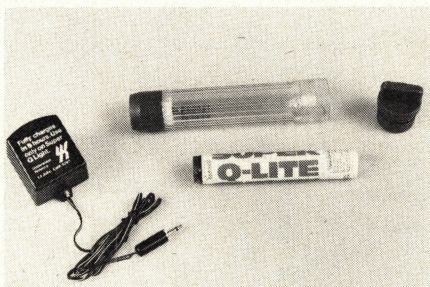
Refining a piece of dive equipment is a task that approaches art. Most manufacturers are content to ride out a product's life with few or no changes. However, changes are made upon occasion. In the case of the Series II Super Q-Lite, the wizards of Underwater Kinetics have taken a good light and made it much better.

Introduced in 1975, the original Super Q pioneered a new category in compact high performance lights for the sport diver. Small enough (7¼ X 1¼ inches) to be a constant companion, brighter than standard lights using a lantern battery and a sealed beam, the Q-Lite gained instant acceptance. Soon it was seen dangling from wrists and game bags, and even tucked up into wetsuits. Because of its small size it also became a favorite accessory for underwater photographers. Strapped to their strobes,



the Q-Lite was an excellent spotting light for framing close-up pictures. California halibut divers taped the Super Q to the tubes of their spearguns for night hunts. In short, the light became a versatile tool for just about every illumination need.

With this kind of acceptance and versatility, you would think that Underwater Kinetics would let well enough alone — after all, why fool with a proven winner? The answer, of course, is that more and more lights are being introduced in the Q-Lite price and performance range. So to remain competitive, U/W Kinetics took advantage of some new technology to produce the Series II Q-Lite. Outwardly it looks the same but burns 50 percent longer and has a shorter recharge time and higher output. And, the Series II Q-Lite retails for \$39.95, its cost four years ago.



PHOTOGRAPHY BY GERI MURPHY

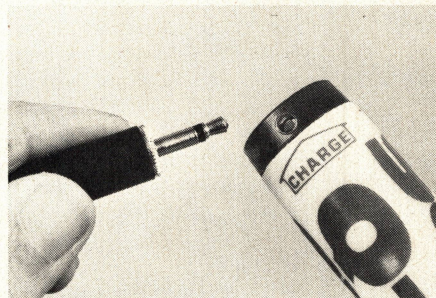
The technical changes that have been made are mostly ones of refinement rather than drastic modifications. The old nicad battery was rated at 0.9 ampere hours, 3.6 volts, measured against a one hour discharge rate. By switching brands, Underwater Kinetics upped the ampere hours to 1.2 with the same voltage and discharge rate, but with 33 percent greater capacity. It is just 1.5 inches longer than the previous battery. The charger has been modified to produce more current at the same voltage, dropping recharge time to between five and eight hours.

If you own an old model Q-Lite, use caution if you purchase a Series II. The chargers are completely different, even down to the polarity of the jacks. Using the wrong charger could ruin either light. To prevent this, Underwater Kinetics has changed the charging arrangement to make them incompatible with each other. Use only a factory approved recharger and do not attempt to use a brand purchased from an electronics store.

The quartz-halogen bulb from which

the Q-Lite draws its name has been completely redesigned. To achieve their performance goals for the new light, the Underwater Kinetics engineers gave all factors a thorough analysis. Emphasis was on balancing battery current and bulb resistance for maximum output. This meant that both the halogen gas mixture in the bulb and the reflector (they are an integrated unit) were completely redesigned. Thus, the Series II Q-Lite is twice as bright as its predecessor. Bulb life remains unchanged, at about 30 hours. Reflector efficiency was increased to an incredible 80 percent — perhaps the highest on the market — producing a tight, narrow beam without dead spots.

The versatility of the Q-Lite has spawned a virtual cornucopia of accessories for it. Priced between \$4 and \$8 are: universal holders for your tank, wrist or leg; a belt holder; special holders for use with



the Oceanic 2000 series strobes; a parallax corrected holder for SubSea strobes; and a holder for the SR 2000 miniature strobe. Wrist lanyards are also available.

If you are the owner of an old model Q-Lite and want to take advantage of the latest developments from Underwater Kinetics, it is possible to have your old light modified under the company's warranty policy. Underwater Kinetics believes that you should only have to purchase a Q-Lite once. The cost of a complete conversion (providing the charger is returned with the old light) is only \$16 and takes about a month. Lights with chargers and a note saying you want your light converted should be sent, along with a check, to: Underwater Kinetics, Series II Conversion, 7052 Convoy Court, San Diego, CA 92111.

The Yellowfin Grouper

(*Mycteroperca venenosa*)

Groupers have no intermuscular bones and are therefore one of the most desirable of fishes for the table. The yellowfin grouper doesn't enjoy such popularity, however, because it is the only grouper in the Bahamas that is sometimes known to cause ciguatera (fish poisoning in humans). The scientific name of the fish — *venenosa* — means venomous in Latin, in reference to this characteristic. Some Bahamians say that when the pectoral fins of the fish are black, it is poisonous. Scientists believe the poison occurs only in some of the larger individuals. □ The pectoral fin of this grouper is usually a bright orange-yellow, which is the reason for its common name. Everything else about the yellowfin grouper is highly variable since it can change colors to match its surroundings. Over a sand bottom it will appear nearly white, and in a dark hole or cave it will appear nearly black. In its most usual phase, the overall color of the fish is pale gray to olive, with dark brown spots or blotches arranged in irregular, horizontal rows. There are sometimes dark red or orange spots scattered here and there. *M. venenosa* is the most common species of *Mycteroperca* in the Bahamas (Randall). It closely resembles *M. bonaci* (the black grouper), but in *M. bonaci*, the dark blotches are more regularly aligned. The pectoral fin of *M. bonaci* is rimmed with orange, but this orange margin is narrow, about 1/5 the fin, whereas the yellow section of *venenosa* is broad, roughly 1/3 the fin (Bohlke and Chaplin). □ Groupers belong to the Serranidae family, which also includes the sea basses. Most serranids are bottom dwellers (living in caves or sitting on the bottom), and they are car-

nivorous, feeding on fishes and crustaceans. Many can change colors to match their surroundings, and almost all of them are sex changers. Most of the large groupers start out life as females and change into males in their later, "terminal" phases. In taxonomic terms, serranids are separated from all other fish families by one constant feature: a complete and continuous lateral line. Some ichthyologists feel that the serranid grouping is too generalized and that the family should be further separated. The entire family of serranids, as it now officially stands, includes fishes that are just

inches long as well as fishes that weigh 1000 pounds. The yellowfin grouper is one of the larger groupers of the Bahamas, growing to a maximum length of about three feet and a weight of 35 pounds. □ The yellowfin grouper feeds on a wide variety of fishes. John E. Randall's 1967 study of the eating habits of this grouper

revealed that at least 95 percent of its diet is comprised of fishes: sergeant majors (*Abudefduf saxatilis*), trumpetfish (*Aulostomus maculatus*), bar jacks (*Caranx ruber*), surgeonfish (*Acanthurus* species), grunts (*Haemulon* sp.), squirrelfish (*Holocentrus* sp.), parrotfish (Scarids), lizardfish (*Synodus* sp.), wrasses (*Thalassoma* sp.), damselfish (*Pomacentrus* sp.), etc. The yellowfin grouper is found from Bermuda, through the Bahamas and off Florida, to Brazil, including the Gulf of Mexico. Among the groupers it is the more active, faster swimming fish, and it has been known to rise up off the bottom to take a trolled lure. The fact that it feeds on the swift-moving bar jack (*Caranx ruber*) is evidence enough that the yellowfin grouper is a fast swimmer indeed. »

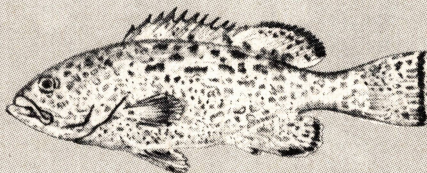


Photo By Paul Tzimoulis - Text By Hillary Hauser

The photo was taken in 30 feet of water at Telephone Pole Reef, San Salvador Island, Bahamas. Tzimoulis used a Rebikoff-Alpha DR-8 U/W camera unit. Shot at f8, 1/60 second, 3 feet from subject, with Ektachrome 64.



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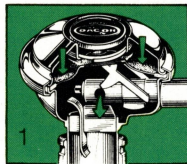
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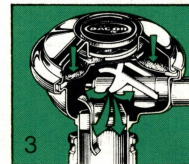
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When the breathing cycle is started, the diaphragm is depressed and the second stage valve is opened. As air enters the regulator, it is directed into the mouthpiece (see drawing #1) causing a partial vacuum that holds the second stage valve open.



As the diver continues the inhalation cycle, the second stage lever continues its downward movement (see drawing #2). At this point, as in the beginning of inhalation, the partial vacuum under the diaphragm is holding it down, relieving the diver of doing so with lung power.



At the height of the inhalation cycle, the lever is further depressed (see drawing #3) and at this point the *Venturamatic Flow Vane* comes in contact with the flow of air entering the mouthpiece. This *Flow Vane* is designed to meter the right amount of air entering the mouthpiece while deflecting a certain portion of the incoming air into the regulator which helps to diminish the partial vacuum, and to prevent the unit from free flowing if the diver should take the unit out of his mouth.

The Dacor PACER also has the exclusive features of *Dual Exhaust* for 50% easier exhalation and purging and the automatic *Anti-Free Flow Device*. See the four new Dacor Pacer models

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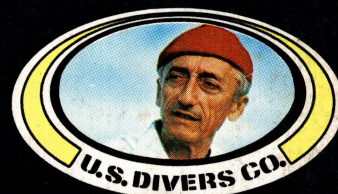


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